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Date: March 1986

STATUS REVIEW OF WOODLAND CARIBOU IN MONTANA

Montana Department of Fish, Wildlife and Parks

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March 1986

Contributors: Montana Department of Fish, Wildlife and Parks
United States Fish and Wildlife Service
United States Forest Service

ACKNOWLEDGEMENTS

Special thanks to the Fortine Ranger District, Kootenai National Forest, for providing working space, supplies, and computer access during the entire project.

TABLE OF CONTENTS

Page

List of Tables iv
List of Figures v
Abstract 1
Introduction 2
Objective 3
Study area 3
Methods 7
Results 8
  Literature review 8
  Reporting form 8
  Canadian information 9
  Historical reports 9
  Recent reports 27
  Historical perspective on habitat 39
  Projection of caribou habitat 47
  Criteria for mapping habitat 51
  Management concerns 52
  Future management efforts 55
  Summary 57
Literature cited 58
Appendix 1 62
Appendix A 72
Appendix B 74
Appendix C 82

LIST OF TABLES

		Page
1	Estimates of caribou for Kootenai National Forest 1919-1982 (U.S.F.S. mimeo. 1982)	18
2	Comparison of number of caribou reports and kills between States and Province by decade, using Freddy's (1974) list and updated list, this report (Appendix 1.), 1900-1969	28
3	Largest reported groups of caribou observed in Idaho, Montana, and Washington, 1920-1985.	30
4	Largest group sizes of caribou reported for each geographical area in Montana, 1900-1985.	31

LIST OF FIGURES

		Page
1	Study area	4
2	Land ownership	5
3	Location of closest known caribou herd to Montana	10
4	Place names associated with the occurrence of caribou	11
5	Reports of caribou prior to 1900	13
6	Reports of caribou, 1900-1985	14
7	Reports of caribou, 1900-1909	16
8	Reports of caribou, 1910-1919	17
9	Reports of caribou, 1920-1929	19
10	Reports of caribou, 1930-1939	21
11	Reports of caribou, 1940-1949	22
12	Reports of caribou, 1950-1959	24
13	Reports of caribou, 1960-1969	25
14	Reports of caribou, 1970-1979	26
15	Number of reported sightings of caribou from Montana, adjacent Idaho, and Canada, 1900-1985	29
16	Number of caribou reported killed, 1900-1985	29
17	Reports of caribou, 1980-1985	32
18	Location of helicopter survey for caribou, March 26, 1983	34
19	Aerial surveys for caribou, April, 1984	35
20	Aerial surveys for caribou, April and May, 1985	36
21	Priority areas for helicopter surveys for caribou, 1986	37
22	Location and sign posted for voluntary snowmobile restriction, Fortine Ranger District, 1986	38
23	Areas influenced by wildfire, 1885-1985	42

24 Epidemic populations of spruce bark beetles, 1950's 44

25 Spruce-fir salvage logging, 1950-1975 45

26 Areas currently or proposed to be removed from timber harvest (National Parks, Wilderness areas, roadless area, and semi-primitive non-motorized recreation) 49

27 Historical range of caribou reviewed to direct any future management efforts 56

ABSTRACT

The woodland caribou status review began in November, 1985 through section 6 funding provided by the U.S. Fish and Wildlife Service. A petition to amend the endangered species listing of woodland caribou in Washington and Idaho to include Montana was recieved in July, 1984. The closest known population of caribou to Montana is located about 40 kilometers from the border in British Columbia. There were 157 reports of caribou recorded in or immediately adjacent to Montana from 1900-1985. Recent reports of caribou are primarily from the Yaak drainage, Galton and Whitefish ranges. Currently there is no evidence of a resident population of caribou in Montana. Portions of historical range have been influenced through wildfire and timber harvest. Major wildfires have not occurred within caribou habitat since 1940, except for the Caribou Mountain fire in 1973. The majority of roading and timber harvest in the spruce-fir forests occurred during the 1950's and 1960's. A large portion of the area in which caribou occurred is within proposed or designated wilderness, or under grizzly bear, big game summer range, and semi-primitive non-motorized recreation management. Intensive mapping of caribou habitat in Montana has not occurred. Cover type mapping which Idaho used appears applicable to Montana. Legal and illegal hunting appears to have had an impact on historical caribou populations. Current and future management concerns applicable to Montana are unstocked historical range, the low productivity of caribou, illegal hunting, and predation. Glacier National Park, the Galton and Whitefish ranges, and the west Cabinet Mountains probably have the highest capability of supporting any caribou populations in the future, based on habitat and future management of the areas. The most likley way to have caribou populations in these areas would be through reintroductions.

INTRODUCTION

The woodland caribou, Rangifer tarandus caribou (Banfield 1961) has been recognized as a member of the ungulate community of Montana (Wright and Thompson 1935, Banfield 1961, Evans 1964, Hoffman and Pattie 1968). Caribou have been recorded in New England, the upper Great Lakes, in the mountains of northeastern Washington, Idaho, and northwestern Montana (Banfield 1961, Hoffman and Pattie 1968), and as far south as northwest Wyoming (Evans 1964).

Reports of caribou in Montana have been sporadic and very little information exists. Historical records of caribou in Montana have been compiled by Flinn (1956), Evans (1960), Layser (1974), and Freddy (1974). Recent and additional historical reports have been compiled by Carlton (1983).

The majority of research has centered on the Selkirk herd in Idaho, Washington, and southern British Columbia (Flinn 1956, Layser 1974, Freddy 1974, Scott 1984), although Evans (1960), Miller (1976), and Carlton (1983) conducted preliminary investigations of caribou and habitat in northwest Montana.

The first written record of caribou in Montana was by Cooper (1868). Since that time historical reports have ranged from the Continental Divide in Glacier National Park (G.N.P.) west to the Idaho line and south to near Missoula (Evans 1960).

Caribou have been classified as a game species with a closed season since 1921 (Montana Fish & Game 1971). For all practical purposes caribou have been considered extinct in the state since 1968 except for casual wanderings (Hoffman and Pattie 1968, Flath 1984). Reports of caribou continued throughout the 1970's and into the 1980's primarily from the upper Yaak and Galton Range.

In 1977 caribou were listed as "a species of special concern" by the Montana Department of Fish, Wildlife & Parks (M.D.F.W.P.) (Flath 1977). Caribou have retained that status to the present.

In February 1984, caribou were listed as an endangered species in Idaho and Washington under the Federal Endangered Species Act. Also in 1984, Regional Forester Tom Coston formally classified caribou as "a sensitive species" on the Kootenai National Forest. The Flathead National Forest is currently "treating" caribou as a sensitive species.

On June 17, 1984, a private citizen formally petitioned the U.S. Fish and Wildlife Service (U.S.F.W.S.) to amend the Federal endangered species listing and protection for woodland caribou in Washington and Idaho to include northwest Montana. The Service found the petition presented substantial information indicating that the request may be warranted.

In an effort to share information being developed on caribou in Montana interagency coordination meetings involving the M.D.F.W.P., U.S.F.W.S., U.S. Forest Service (U.S.F.S.) and G.N.P. were started in June of 1984. A two year study proposal was formulated which included a plan of action, costs, and logistical responsibilities. A subcommittee was formed from this group to identify further specific elements needed in surveys, review of records,

habitat evaluation, and activities that should be undertaken through a section 6 funded project.

The present status of the petition for listing is that it has been placed in Category II. This means listing by the Service is possibly appropriate but usually requiring further biological research and field study necessary to ascertain the status of the species. A decision on listing should occur in July 1986.

This project began November 1985 and continued through March 1986.

OBJECTIVE

To accumulate all of the known woodland caribou information from Montana into a central location and present it in one document.

STUDY AREA

LOCATION

The study area was located in northwestern Montana, adjacent Idaho, and British Columbia (Figure 1). Specific study area boundaries were based on topography and historical caribou distribution (Evans 1960, Evans 1964, Hoffman and Pattie 1968, Layser 1974).

LAND OWNERSHIP

The majority of the lands are administered by the U.S.F.S., G.N.P., Montana Department of State Lands, and B.C. Forest Service. Limited amounts of private and corporation lands are also included (Figure 2).

PHYSICAL ENVIRONMENT

The study area is characterized by rugged, northwest trending mountain ranges separated by narrow valleys. Elevations range from 570 m. in the Kootenai drainage to over 2900 m. in the Livingstono Range. Extensive continental and alpine glaciation influenced the topography (Alden 1953). Major mountain ranges include the Bitterroots, Cabinets, Livingstone, Purcells, and Whitefish. Primary drainages are the Clark Fork, Flathead, and Kootenai.

Climate is dominated by Pacific maritime weather. Winters are usually cloudy, mild, and wet. Fall and winter rain and snow are often steady and gentle. Summer days are usually warm with cool night time temperatures. Precipitation varies with topography but generally the valleys receive around 60 cm. annually with more than 250 cm. in the higher elevations of the Cabinets and Livingstone ranges. November through January are the wettest months and also the period of

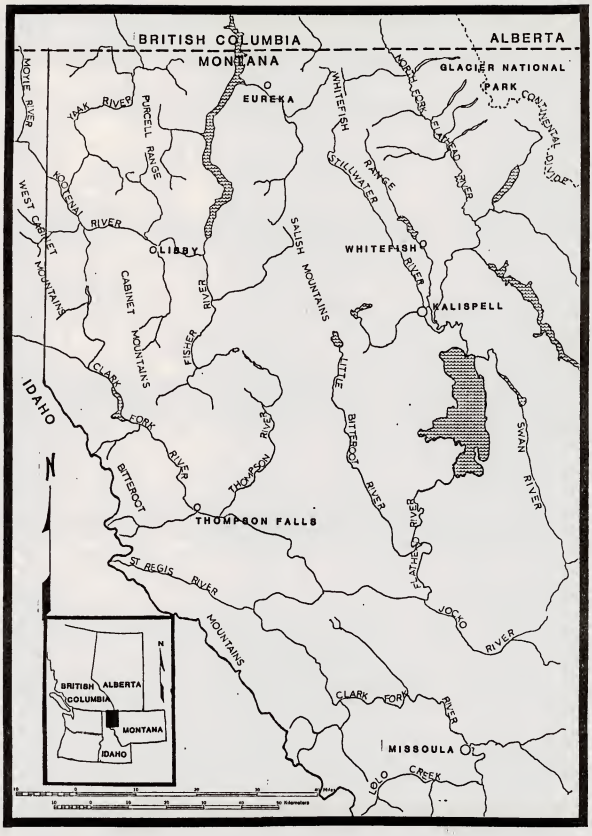


Figure 1. Study Area.

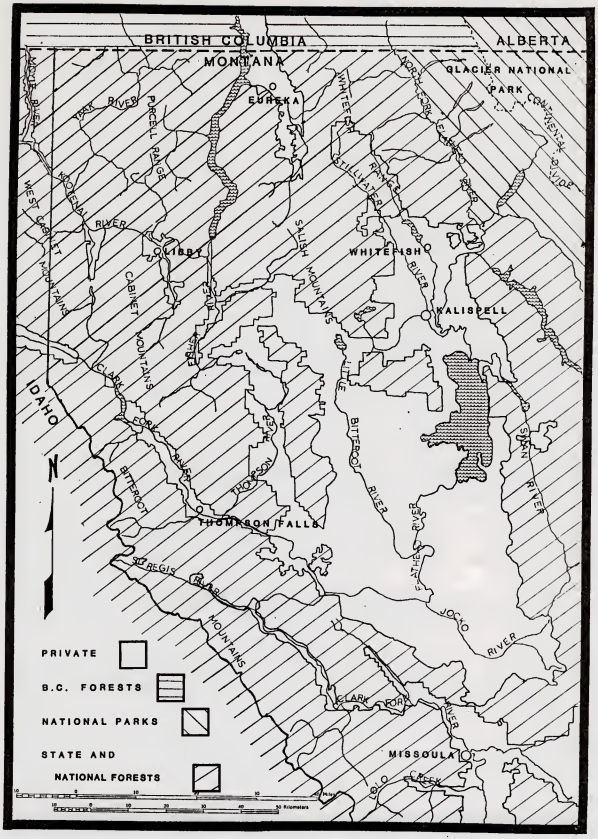


Figure 2. Land ownership

greatest snowfall accumulations. Snowpack depths vary with elevation and location and are usually greatest the first of April.

VEGETATION

Elevation has a major effect on climate and therefore on vegetation patterns (Pfister et al. 1977). The lower elevational limits of coniferous forests are controlled primarily by moisture, while the upper elevational limits are controlled primarily by temperature.

The lower, drier elevations are dominated by ponderosa pine (Pinus ponderosa) and Douglas fir (Pseudotsuga menziesii), while the warm moist western valleys are dominated by western red cedar (Thuja plicata) and western hemlock (Tsuga heterophylla). Subalpine fir (Abies lasiocarpa) and spruce (Picea engelmannii) tend to dominate elevations above 1500 m. Stands of whitebark pine (Pinus albicaulis) and alpine larch (Larix lyallii) are found above 1980 m. Seral stands of lodgepole pine (Pinus contorta) and western larch (Larix occidentalis) are common at mid-elevations.

Understory vegetation within the cedar-hemlock forests consists primarily of moist site forbs and shrubs such as queencup beadlily (Clintonia uniflora), devil's club (Oplopanax horridum), mountain lover (Pachistima myrsinites), and lady fern (Athyrium filix-femina). Spruce-fir stands have understories of menziesia (Menziesia ferruginea), blue huckleberry (Vaccinium globulare), grouse whortleberry (Vaccinium scoparium), beargrass (Xerophyllum tenax), and smooth wood-rush (Luzula hitchcockii).

HISTORY

Human beings occupied portions of northwest Montana at least 6,000 years ago (Malouf 1969) and possibly since the retreat of the last continental glaciers 10,000 years ago (Choquette and Holstine 1980).

As of 1855, three main Indian tribes inhabitated the area, the Kootenai, Pend d'Oreille, and Flatheads (Malouf 1974). Generally, the native people were gatherers and hunters that lived in and traveled the lower valleys.

European activity began in 1808 when David Thompson entered Montana from the north along the Kootenai river (Thompson 1985). The fur trade gave rise to trading posts and was most prominent during the mid-1800's.

Settlers came into the area around 1860 and several settlements were established in the late 1880's. The arrival of the Great Northern Railroad in the 1880's and early 1890's opened the way for establishment of permanent communities.

Mining became prominent in the late 1800's and hard rock mining was the principal support of communities like Troy and Libby. Agriculture became important in the Bitteroot, Flathead and Tobacco valleys.

The timber industry got its start during the time of railroad construction. The need for railroad ties and the ability to ship lumber by rail increased the

harvest of timber in the accessible areas. By the 1940's lumber had passed mining in economic importance.

Creation of the Forest Reserves occurred in 1898 and the National Forests around 1906.

Glacier National Park was created in 1910, the same year that large wildfires burned millions of hectares in Glacier, the North Fork of the Flathead, the Yaak, and Bitteroots. Large wildfires were prevalent until the 1930's when fire supression became a reality. Since the 1930's fire has essentially been removed as an ecological force (Barrett and Kilgore 1983).

In the late 1940's severe blowdown occurred in high elevation spruce-fir stands resulting in epidemic populations of spruce bark beetles (Dendroctonus rufipennis). By the mid-1950's in an effort to salvage the windthrow and beetle killed timber the U.S. and B.C. Forest Service began logging the previously inaccessible spruce-fir basins. Logging and road building continued in these areas throughout the 1950's and 1960's and began to subside in the 1970's.

Primary land use has been and continues to be timber production, recreation, and mining. Major human populations are located in Missoula, Kalispell, Whitefish, Columbia Falls, Libby, and Eureka.

METHODS

Published and unpublished works pertaining to the woodland and mountain caribou including journals, theses, reports, and proceedings, were reviewed. Selected references were typed on 3X5" note cards and catalogued alphabetically by author.

A caribou reporting form, rating system, and followup procedure was developed.

Canadian biologists adjacent to Montana were contacted to discuss caribou reports and habitat in southeastern British Columbia.

Historical range and population perspectives were obtained through past sighting records, reports, interviews and conversations with local American and Canadian residents, trappers, hunters, loggers, outfitters, guides, skiers, snowmobilers, State, Federal, and Provincial personnel. In mid-January the M.D.F.W.P. put out a press release asking for any information on caribou in Montana. The press release was distributed to about 43 news agencies throughout Montana. Forest Service and G.N.P. files were also searched for references to caribou.

Developement of a recent range map and population perspective was based upon reported sightings and sign since 1980.

Habitat and range maps were put on 1:126,720 scale maps due to the size of the study area. An instensive mapping effort on 7.5 minute topographic maps would be desireable, but due to the time involved was not possible.

Fire history maps from the U.S.F.S and G.N.P. were obtained. Complete fire history maps for adjacent B.C. could not be located.
Habitat type and landtype maps for the Kootenai and Flathead National Forests were used to develop a general overview of the vegetation for those areas. Stand data was not complete for much of the area in which caribou sightings have occurred.

Future changes within caribou habitat are difficult to predict. Potential key areas were identified and by examining future land use planning records it is possible to determine the amount of change that will occur due to human activities such as logging, roading, mining, and prescribed burning. Natural forces which may change the habitat such as climate, fires, insect infestations, and wind are difficult to predict, but general trends and patterns can be identified.

The Panhandle National Forest in Idaho has developed criteria for mapping caribou habitat in the Selkirks. Idaho's mapping system was reviewed to determine if it might be applicable to Montana.

General categories of managemet concerns pertinent to caribou were identified from past research. Concerns that may be applicable to caribou in Montana were noted and disscussed in more detail.

The historical range of caribou was reveiwed to direct any future management efforts. Past, present, and future management of the habitat was one of the primary considerations. Historic abundance of caribou in the areas was also of primary concern.

RESULTS

LITERATURE REVIEW

Published and unpublished journals, theses, proceedings, and reports pertaining to the woodland and mountain caribou were reviewed. Sixty-five selected works were typed on 3X5" note cards and were catalogued alphabetically by author. The card file is located at the Montana Department of Fish, Wildlife and Parks Regional Office in Kalispell.

REPORTING FORM

A caribou reporting form (Appendix A) was developed for future reports. A rating system (Appendix B) was developed in order to rate caribou reports on an equal basis. A procedure to followup future caribou reports (Appendix C) was developed to ensure that there would be an agreed upon speedy and smooth course of action.

CANADIAN INFORMATION

Regional Wildlife Biologist Ray Demarchi, and Wildlife Technician Bill Warkentin were contacted about reports of caribou and habitat in southeastern British Columbia.

There have been no reports of caribou in the Wigwam or North Fork of the Flathead drainages documented by Canadian biologists. The area is included in the interior dry zone and does not appear to be suitable caribou habitat (Demarchi pers. comm.).

The area west of Lake Koocanusa (ie. Yahk-Gilnockie-Gold-Bloom watersheds) contain some wet zone forests and appear to have some potential for caribou, although marginal (Demarchi pers. comm.).
There is one report of caribou from the Yahk-Sundown Creek area from 1984. Shirley Pearson of Kimberly, B.C., reported seeing 1 calf, 3 cows, and 1 unclassified caribou while cross-country skiing the last week in February (Warkentin pers. comm.).

The closest known population of caribou to Montana is located northwest of the Moyie River, about 40 Km from the border (Figure 3). Demarchi estimates the population at between 100-150 animals. Biologists plan to fly the area this spring to get a better handle on the population.

Canadian guides and outfitters working the Wigwam and N. Fk. of the Flathead drainages were contacted about caribou. They reported that they had never seen or heard of caribou in that area.

The biologists, conservation officers, B.C. Forest Personnel, and outfitters of southeast British Columbia were informed of the M.D.F.W.P. interest in continuing the exchange of any future reports of caribou adjacent to the Montana-British Columbia border.

HISTORICAL REPORTS

The history of caribou in Montana is largely unknown. Published and unpublished documents by Flinn (1956), Evans (1960), Layser (1974), and Freddy (1974) compiled considerable information on caribou in the Northwest, including Montana, but centered primarily on the caribou of Idaho and Washington. Carlton (1983) compiled historical and recent reports from the Yaak River drainage in northwestern Montana.

From the past research and additonal reports obtained during this project there have been 157 reports of caribou or caribou sign in or immediately adjacent to Montana since 1900 (Appendix 1).

There are five place names in or immediately adjacent to Montana that are connected in some way to the occurrence of caribou (Figure 4). Two creeks were named Caribou Creek, one a tributary to the Yaak the other a tributary to Callahan Creek, because they were once frequented by caribou (Evans 1960).

Figure 3. Location of closest known caribou herd to Montana.

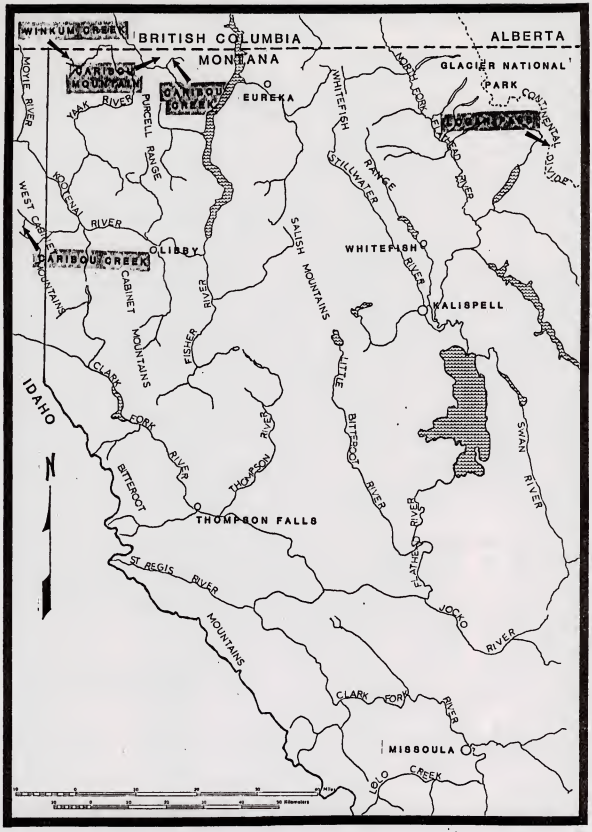


Figure 4. Place names associated with the occurrence of caribou.

Winkum Creek, a tributary to the West Fork of the Yaak is the location of where a caribou was killed between 1900 and 1910 by a member of a survey party (Evans 1960). Caribou Mountain located in the Yaak above Caribou creek was also known to be inhabited by caribou. The old Kutenai Indian name for Logan Pass which translates into "bigfeet was killed" is beleived to be from some incident involving caribou (Ruhle 1976).

There have been 10 reports of caribou documented in Montana prior to the 1900's. These reports came from the Bitteroot and Cabinet Mountains, the Yaak drainage, and Galton Range (Figure 5).

The first recorded evidence of caribou in Montana was that of a set of antlers found near Missoula, Montana (Cooper 1868).

The first recorded observation of caribou in Montana was by Lord, a naturalist for the British crew surveying the 49th parallel. He reported observing caribou in the Galton Range in 1861 (Thompson 1985).

Schaeffer (1940) and Turney-High (1941), reported that the Kutenai Indians hunted caribou (nax ane) in the Yaak area prior to the 1900's. Schaeffer reported that prior to the beginning of extensive bison hunting on the plains, which was believed to have occurred in the mid-18th century after the indians acquired horses (Roe 1955), some Tobacco Plains parties hunted caribou along the lower Yaak River. Traditions state that hunting parties from Tobacco Plains would travel westward through the Purcell Range to the headwaters of the Yaak, then down that stream through the caribou habitat.

Turney-High noted that the "Tobacco Plains and Libby bands often joined the Bonners Ferry and Creston folk on the caribou grounds somewhere between the Tobacco Plains and Yakt".

A report that may help substantiate the Kutenai Indians use of caribou is that of a bone fragment, identified as caribou, found in an archealogical site along present day Lake Koocanusa (Thoms 1984).

References to numbers of caribou prior to the 1900's are few, only descriptive in nature and primarily from the Yaak drainage. A Bonners Ferry informant said that caribou were "formerly numerous along the Yaak" (Schaeffer 1940). Turney-High (1941) noted that "often enough caribou were found around home to obviate the necessity of travel", and Johnson (1969) wrote that caribou in the upper Kutenai range were "thick in the old days".

Evans (1960) believed that the period prior to 1900 represents the time of greatest caribou abundance due to the relatively undisturbed environmental conditions and that they were near the carrying capacity of their range unless indians had an effect on the populations.

Reports of caribou in Montana since the 1900's to the present have been sporadic. The general historical range of caribou can be determined through the decades by plotting kills, sightings, and track reports (Figure 6).

It is difficult to estimate populations due to the fact that no attempts to census caribou in Montana were ever made. By noting the largest group size

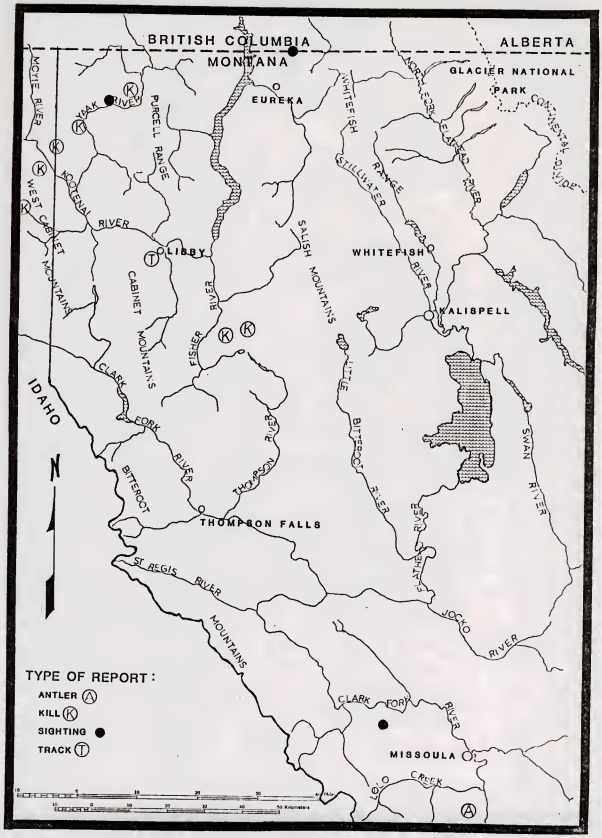


Figure 5. Reports of caribou prior to 1900.

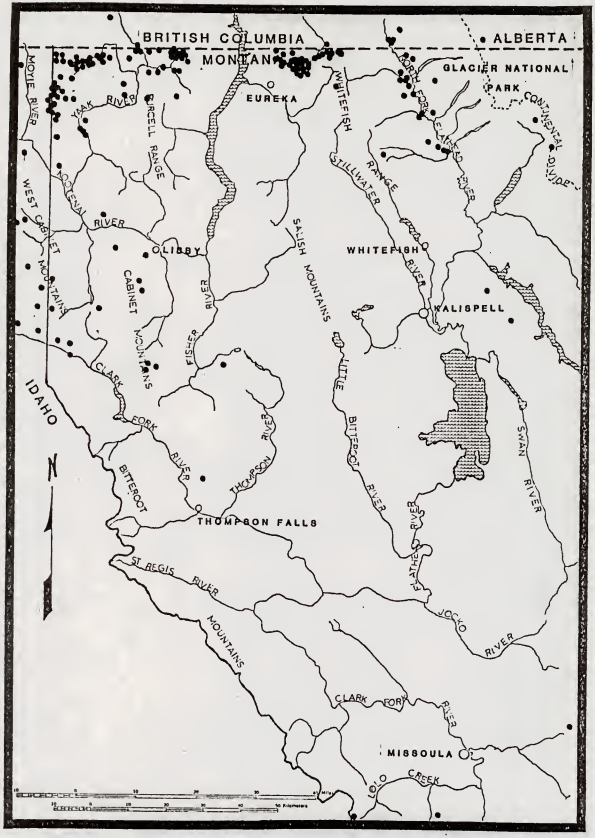


Figure 6. Reports of caribou, 1900-1985.

observed and the geographic location of the observation it is possible to track general trends in certain locales.

1900-1909

There are 7 reports of caribou in Montana during this decade. The majority of the reports are from Buckhorn Ridge in the Yaak (Figure 7).

A total of 12 caribou were reportedly killed during this time period. One in the southern portion of the West Cabinets and 1 at Winkum Creek in the West Fork of the Yaak (Evans 1960). Although 10 were killed on Buckhorn Ridge in 1905 (Flinn 1956), numerous caribou were reported from that same area afterwards.

1910-1919

The statewide season was closed on caribou in 1910 (Montana Fish and Game 1971).

Caribou continued to be reported in the Yaak River drainage and for the first time reports of caribou from the North Fork of the Flathead drainage were recorded (Figure 8).

Two caribou were reported killed. One in the Yaak (Curtiss pers. comm.) and 1 at Red Meadow Creek (Evans 1960).

Evans (1960) reported that it was during this decade that caribou were last observed crossing the Yaak River above Sylvanite.

No numbers of animals were mentioned in any of the reports. Observations included general references such as "some" and "a small band".

In 1919 the U.S.D.A. began recording estimates of game animals for the Forests. Estimates for caribou on the Kootenai National Forest (K.N.F.) was 30 animals (Table 1).

1920-1929

Caribou were placed among Montana's protected game species in 1921 (Montana Fish and Game 1971).

There are 15 reports of caribou during this decade. Reports are from the Cabinet Mountains, the Yaak drainage, Galton Range, and N. Fk. of the Flathead drainage (Figure 9).

Eight caribou were reported killed. Three in the West Cabinets and 2 in the main Cabinets near Geiger Lakes (Evans 1960, Layser 1974). Antlers from a mature bull believed to have been shot in the "Eureka area" are in the posession of Paul Fauth of Whitefish, Montana. A bull caribou was reportedly killed near Logan Pass in Glacier National Park by members of Kai'na tribe (G.N.P. Wildlife Observation cards). One caribou was killed near Buckhorn

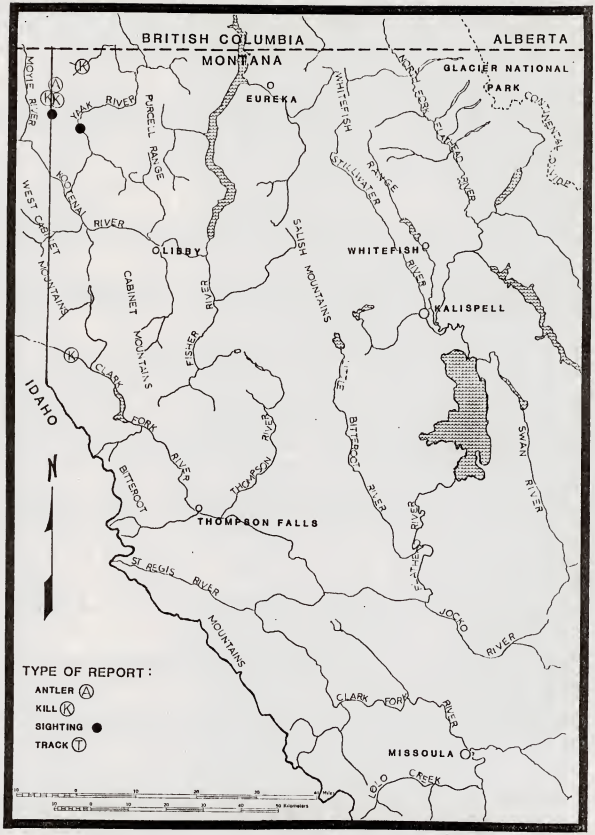


Figure 7. Reports of caribou, 1900-1909.

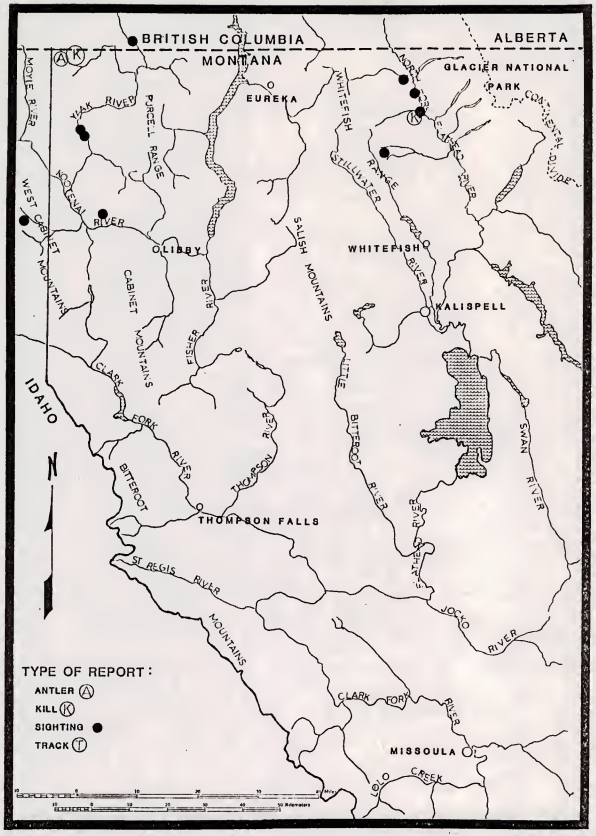


Figure 8. Reports of caribou, 1910-1919.

Table 1. Estimates of caribou for Kootenai National Forest 1919-1932*(U.S.F.S. mimeo. 1932).

Year	Estimate	Year	Estimate
1919	30	1951	No report
1920	30	1952	No report
1921	25	1953	No report
1922	30	1954	No report
1923	20	1955	No report
1924	20	1956	No report
1925	20	1957	No report
1926	6	1958	No report
1927	-	1959	No report
1928	5	1960	No record
1929	-	1961	No record
1930	-	1962	No record
1931	3	1963	No record
1932	3	1964	No record
1933	10	1965	0
1934	6	1966	9
1935	8	1967	6 (Yaak)
1936	-	1968	3 (Yaak)
1937	No record	1969	5 (Yaak)
1938	No record	1970	5 (Yaak)
1939	No record	1971	6 (Yaak)
1940	0	1972	5 (Yaak)
1941	0	1973	10 (Yaak)
1942	0	1974	5 (Yaak)
1943	0	1975	5 (Yaak)
1944	4 (Yaak)	1976	5 (Yaak)
1945	4 (Yaak)	1977	0
1946	0	1978	5 (Yaak)
1947	0	1979	0
1948	0	1980	0
1949	No report 1/	1981	0
1950	No report	1982	0

* These figures are estimates only. No census techniques were used to determine the numbers.

1/ Form changed, caribou not listed

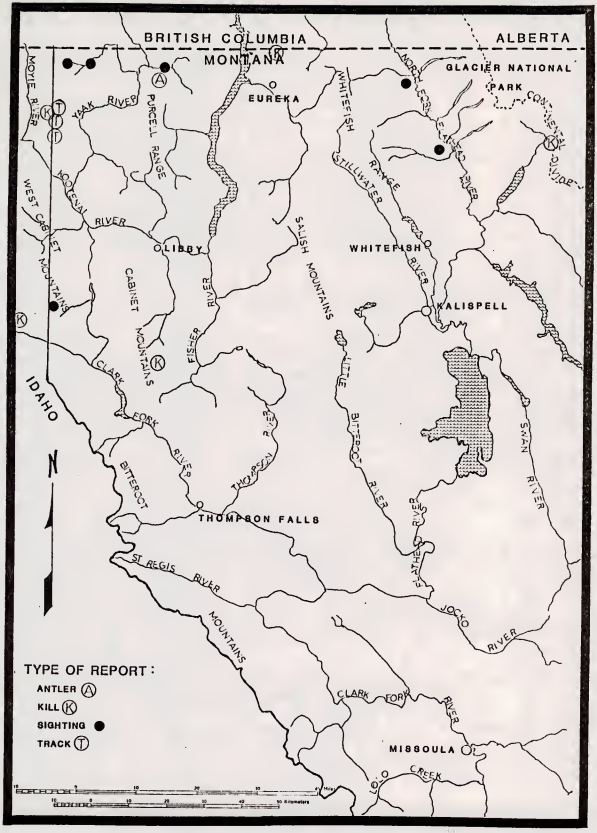


Figure 9. Reports of caribou, 1920-1929.

Ridge on Goat Mountain (Flinn 1956).

The largest group of caribou observed in the Yaak was 7 in the East Fork of the Yaak. The largest group observed in the N.Fk. of the Flathead drainage was 14 near Cyclone Lake (Evans 1960).

The U.S.D.A. reported a high of 30 caribou in 1920 to a low of 0 in 1929 for the Kootenai National Forest.

1930-1939

Caribou were again protected by a closed season in 1935 (Montana Fish and Game 1971), which has remained in effect to the present.

Twenty-four reports of caribou are listed for this decade. Observations were recorded in the Bitterroot and Cabinet Mountains, the Yaak drainage, Galton and Whitefish ranges, N.Fk. of the Flathead drainage, and Glacier National Park (Figure 10).

There was only one report of a caribou being killed during this period, it came from the Galton Range (Carvey pers. comm.).

The largest reported group was from the Lolo Pass area of 8-12 animals (Nelson pers. comm.). Eleven caribou were observed in the Caribou Creek drainage in the Yaak (Carvey pers. comm.) and 4 caribou were repeatedly observed in the Galton Range during the summer of 1935 (West pers. comm.). Kajawa (pers. comm.) reported that he observed caribou on several occassions in the Cabinets, Yaak drainage, and Galton Range but no numbers of animals were mentioned.

Population estimates from the U.S.D.A. ranged from 0-10 caribou on the Kootenai National Forest during this decade.

1940-1949

There are 18 caribou reports for this decade. Sightings occurred in the Cabinet Mountains, Yaak drainage, Galton Range, and N. Fk. of the Flathead drainage (Figure 11).

Four caribou were reportedly killed in the Yaak (Evans 1960), 1 in the Galton Range (Miller pers. comm.), and 1 in the N.Fk. of the Flathead (Carlton pers. comm.).

Lechleitner (1955) reported that caribou entered G.N.P. from British Columbia and the last report was in 1949. The 1949 report could not be located.

The largest group of caribou observed in the main Cabinets was 11 on Dad Peak (Evans 1960). The largest group ever reported in northwest Montana was 35 in the Pine Creek drainage in the Yaak (Evans 1960). The largest group reported from the Galton Range was 11 in Blacktail Basin (Miller pers. comm.).

The Kootenai National Forest reported an estimate of 4 caribou during this decade. In 1949 caribou were removed from the reporting form.

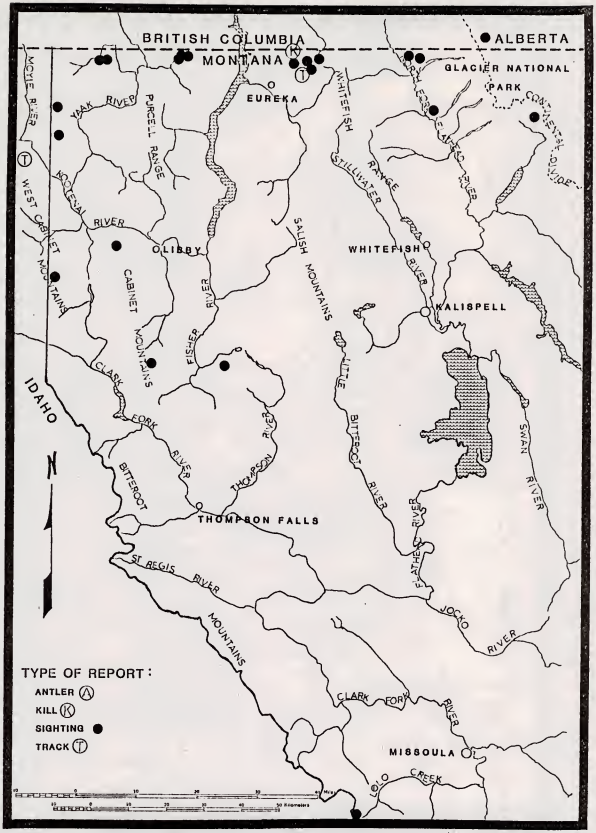


Figure 10. Reports of caribou, 1930-1939.

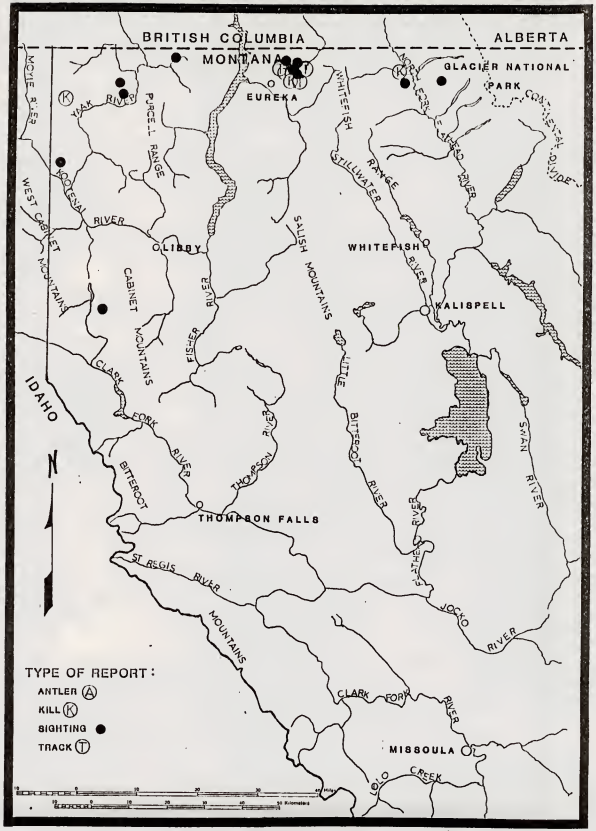


Figure 11. Reports of caribou, 1940-1949.

The Fish and Wildlife Service listed 15 caribou in Montana in its 1948 wildlife summary (U.S.D.I. 1948).

1950-1959

There were more caribou reports from this decade than any other, most likely due to the increased access into the more remote spruce-fir basins and active searching and interviewing by biologists. Most of the 33 reports came from the Yaak drainage, some from the Galton Range, and a few from the Cabinet Mountains (Figure 12).

At least 8 caribou were reported killed during this period. Five from the Yaak area (Evans 1960, Carlton pers. comm.), 2 in the West Cabinets (Layser 1974), and 1 in the main Cabinets (Kajawa pers. comm.).

The largest group observed in the Cabinets was 12-15 (Kajawa pers. comm.). Eleven were observed in one group in the Whitefish Range (Miller pers. comm.) and 7 were sighted at one time in the Yaak (Flinn 1956).

There are no population estimates for caribou in the Forest Service or U.S.F.W.S. records for this decade.

1960-1969

Seventeen reports of caribou came from the Cabinet Mountains, Yaak, Galton Range, and again from the Bitteroot Mountains (Figure 13). There was also a report of caribou near the headwaters of the Blackfoot River (Evans 1964).

Only one report of a caribou being killed was recorded. This apparently occurred near Phillips (Okago) Lake in the Yaak (Layser 1974).

At least 11 caribou were observed in the Caribou Creek drainage in the Yaak (Burke pers. comm.) and 14 in the Galton Range (Pluid pers. comm.). Two caribou were reported in both the west and main Cabinet Mountains (Layser 1974). A report of a mature bull came from the Lolo Peak area in the Bitteroots (Beattie pers. comm.).

The Forest Service reporting form was changed in 1967 and again included caribou. There was an estimate of 5 caribou on the Kootenai National Forest in the Yaak area.

1970-1979

There are 15 reports of caribou for this decade from the Yaak, Cabinet Mountains, Galton and Whitefish ranges (Figure 14).

Two caribou were reportedly killed in the early 1970's. One was a mature bull believed to have been killed in the Yaak drainage (Brennan pers. comm.) and the antlers are in Brennan's possession (the exact location, date and original owner are unknown at this time). The second reported kill was near Hay Creek in

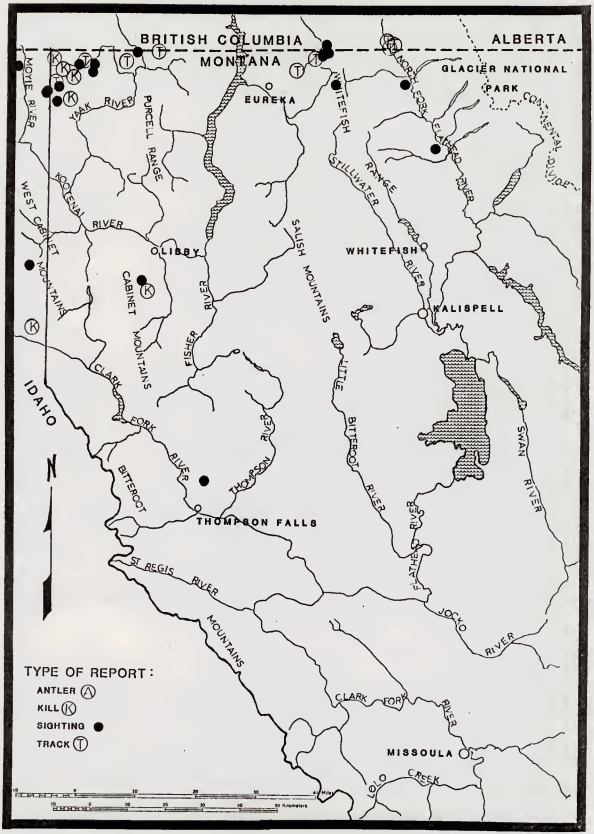


Figure 12. Reports of caribou, 1950-1959.

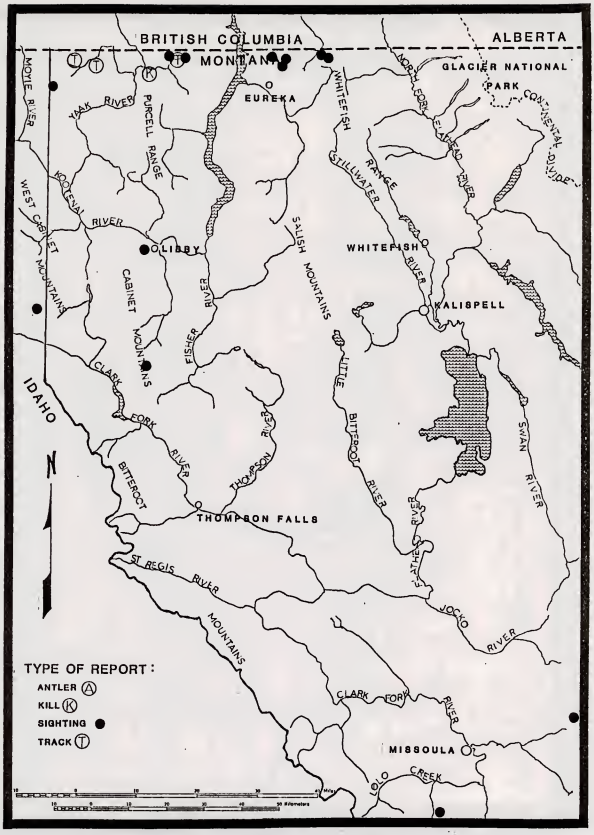


Figure 13. Reports of caribou, 1960-1969.

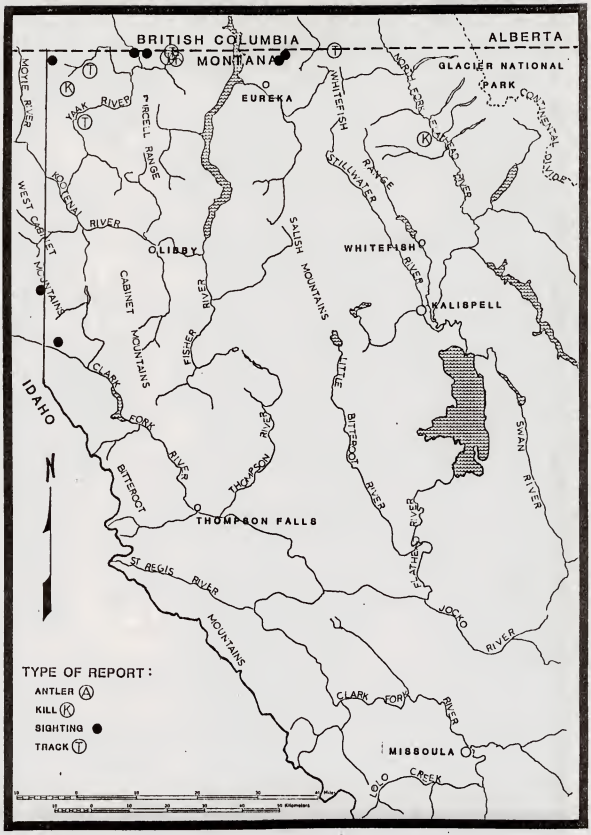


Figure 14. Reports of caribou, 1970-1979.

1973 and was believed to be a female. The head and hide was left but the meat was gone (Mayer pers. comm.).

The largest group of caribou reported was 13 in the Galton Range (Curtiss pers. comm.). Eleven were counted in the Yaak drainage (Carlton 1983) and a group of 5 were reported in the West Cabinets (Layser 1974).

The U.S.D.A. recorded a population estimate of 10 on the Kootenai National Forest (Yaak area) in 1973.

In 1974, Freddy listed caribou reports that were gathered from Idaho, Montana, Washington, and adjacent British Columbia. A comparison of the total number of reports, kill reports, and updated reports from 1900-1969 are presented in Table 2. When looking at just Freddy's list it is interesting to note that although the majority of the caribou research occurred in the Selkirks, Montana had the same number of reports as Idaho during the 1910's and 1920's. When additional reports from this study are added to Freddy's list, Montana has more reports of caribou listed from 1910 through the 1940's. The large increase in the number of reports in Idaho and Washington during the 1950's is largely attributed to Flinn's (1956) observations. The majority of reported kills came from Idaho, followed by Montana, then Washington and British Columbia.

The largest number of reported sightings of caribou in the study area occurred in the 1930's with 21 reports, followed by a decline in the 1940's, and then another increase to 18 in the 1950's (Figure 15).

A high of 12 caribou were reportedly killed within the study area in the 1900's, with other peaks in the 1920's and 1950's (Figure 16).

The largest group of caribou observed in Montana was 35 in the 1940's (Table 3). The largest groups reported per decade remained fairly constant into the 1970's, but declined in the 1980's.

The largest group sizes reported for each geographical location within the study area are listed in Table 4.

RECENT REPORTS

1980-1985

Sixteen reports of caribou have been reported during these six years, primarily from the Yaak drainage and Galton Range (Figure 17). Reports have also come from the West Cabinets, N.Fk. of the Flathead and even the Swan Range (Carlton pers. comm.).

The only confirmed report in Montana is the track report from 1984 in the Wigwam drainage (Dimeo pers. comm.).

The other sightings and track reports could not be confirmed by biologists, but some are considered to be credible.

Table 2. Comparison of number of caribou reports and kills between States and Province by decade, using Freddy's (1974) list and updated list, this report (Appendix 1), 1900-1969.

Decade	State/Province	Reports[1]	%	Reports[2]	%	Kills[3]	%	Kills[4]	%
	British Columbia	0	0	0	0	0	0	0	0
1900-	Idaho	14	64	14	64	3	67	3	67
1909	Montana	7	32	7	32	4	33	4	33
	Washington	1	4	1	4	0	0	0	0
	British Columbia	1	5	1	4	0	0	0	0
1910-	Idaho	8	40	8	36	2	67	2	50
1919	Montana	8	40	10	45	1	33	2	50
	Washington	3	15	3	14	0	0	0	0
	British Columbia	5	17	5	15	0	0	0	0
1920-	Idaho	10	33	10	29	3	50	3	43
1929	Montana	10	33	14	41	2	33	3	43
	Washington	5	17	5	15	1	17	1	14
	British Columbia	4	13	4	9	0	0	0	0
1930-	Idaho	10	32	10	21	1	50	1	33
1939	Montana	6	19	22	47	0	0	1	33
	Washington	11	35	11	23	1	50	1	33
	British Columbia	1	4	1	3	0	0	0	0
1940-	Idaho	11	42	11	28	1	50	1	25
1949	Montana	5	19	18	46	1	50	3	75
	Washington	9	35	9	23	0	0	0	0
	British Columbia	16	15	20	15	2	29	2	18
1950-	Idaho	66	61	56	51	3	43	3	27
1959	Montana	7	6	24	18	1	14	5	45
	Washington	20	18	20	15	1	14	1	9
	British Columbia	27	30	27	25	0	0	0	0
1960-	Idaho	36	40	35	35	0	0	0	0
1969	Montana	4	4	15	15	1	100	1	100
	Washington	24	26	24	24	0	0	0	0

1 Total number of reports listed by Freddy (1974).
2 Total number of updated reports from Freddy (1974) and this report (Appendix 1).
3 Reported number of kills (Freddy 1974).
4 Updated reports of kills from Freddy (1974) and this report (Appendix 1).

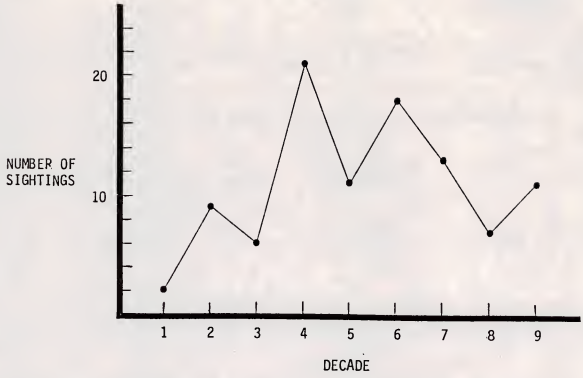


Figure 15. Number of reported sightings of caribou from Montana, adjacent Idaho, and Canada, 1900-1985.

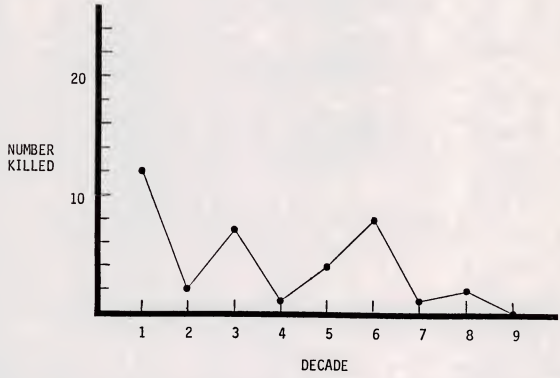


Figure 16. Number of caribou reported killed, 1900-1985.

Table 3. Largest reported groups of caribou observed in Idaho, Montana, and Wahington, 1920-1985.

Decade	State	Group Size	Source
1920's	Idaho	6	Flinn
	Montana	14	Evans
	Washington	18	Layser
1930's	Idaho	13	Flinn
	Montana	11	Manley
	Washington	15	Johnson
1940's	Idaho	20	Evans
	Montana	35	Evans
	Washington	7	Johnson
1950's	Idaho	30	Flinn
	Montana	13	Evans
	Washington	15	Layser
1960's	Idaho	22	Layser
	Montana	14	Manley
	Washington	8	Layser
1970's	Idaho	16	Jerry
	Montana	13	Manley
	Washington	15	Layser
1980's	Idaho	14	Jerry
	Montana	3	Manley
	Washington	?	

Table 4. Largest group sizes of caribou reported for each general geographical area in Montana, 1900-1985.

Decade	Location	Number reported	Source
1900-1909	-	no numbers	-
1910-1919	-	no numbers	-
1920-1929	Whitefish Range	14	Evans
	Yaak	7	Evans
1930-1939	Yaak	11	Manley
	Bitteroot Mountains	8-12	Manley
	Galton Range	4	Manley
1940-1949	Yaak	35	Flinn
	Cabinet Mountains	11	Evans
	Galton Range	11	Manley
1950-1959	Cabinet Mountains	12-15	Manley
	Whitefish Range	11	Manley
	Yaak	7	Flinn
1960-1969	Galton Range	14	Manley
	Yaak	11-14	Manley
	Cabinet Mountains	3	Layser
1970-1979	Galton Range	13	Manley
	Yaak	11	Carlton
	Cabinet Mountains	5	Layser
1980-1985	Whitefish Range	3	Manley
	Yaak	2	Carlton
	Cabinet Mountains	2	Manley

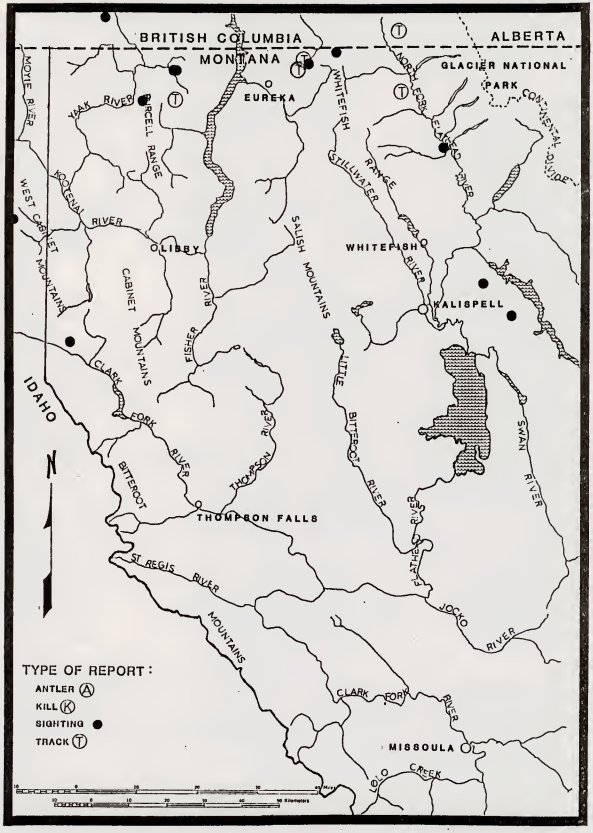


Figure 17. Reports of caribou, 1980-1985.

Past and on going attempts to locate caribou in Montana has proven unsuccessful to date, except for the track report from the Wigwam in 1984. Aerial surveys of the high ridges and spruce-fir basins during late winter are considered the best technique to locate caribou in the Selkirks (Scott pers. comm.).

On May 16, 1982, Carlton flew the upper Yaak area in an aerial survey funded by the National Audubon Society. The area covered included Northwest Peak to Robinson Mountain and Buckhorn Ridge south to Windy Pass. No caribou or caribou sign was observed. Carlton reccomended future flights be conducted in late February and March.

Under special contract with the Kootenai and Flathead National Forests, the M.D.F.W.P. began conducting helicopter surveys for caribou on March 26, 1983 in the Galton and Whitefish ranges (Figure 18).

In April of 1984, the M.D.F.W.P. conducted helicopter surveys in the Whitefish and Galton ranges and Idaho Fish and Game (I.F.G.) conducted fixed-wing aerial surveys in the west Cabinet Mountains and upper Yaak drainage (Figure 19). It was during the helicopter flights that ungulate tracks were reported above Little Therriault Lake in Bluebird Basin. The Fortine District wildlife biologist identified the tracks as being caribou (Dimeo pers. comm.).

Flights in April and May of 1985, were again conducted by the M.D.F.W.P. in the Whitefish and Galton ranges, and by I.F.G in the west Cabinets and upper Yaak (Figure 20). Servheen, of I.F.G., reported observing tracks similar in appearance to caribou in the West Cabinets, west of Bee Top Mountain (T56N,R2E,S2). The tracks could not be positively identified (Servehoen pers. comm.).

Carlton also conducted privately funded fixed-wing flights in the Galton and Whitefish ranges, N. Fk. of the Flathead drainage, Glacier National Park, Swan Range, and portions of the upper Yaak. He reported a suspicious set of tracks north of Caribou Mountain in British Columbia, but could not be certain they were from caribou (Carlton pers. comm.).

Helicopter surveys are planned for 1986, with priority areas identified in the Whitefish and Galton ranges, and West Cabinets (Figure 21). Aerial surveys will be conducted during March and early April. (Note: Aerial surveys for 1986 were concluded in May. Three seperate flights were conducted in the priority one areas, no caribou or caribou sign was found). This year is scheduled to be the last for aerial surveys.

Prior to the 1986 surveys, there was a concern that heavy snowmobile use in the Wigwam drainage may be influencing any possible caribou use of the area. In an effort to reduce heavy snowmobile use, the Fortine Ranger District in cooperation with the M.D.F.W.P. placed a voluntary restriction on snowmobile use in the Wigwam drainage (Figure 22). The program implemented by the District appears to have been successful in reducing the level of snowmobile use in the area, although use still occurred.

Brief field surveys conducted during the spring, summer, and winter by Carlton, Manley, State, and Forest Service personnel have not produced any verification of caribou.

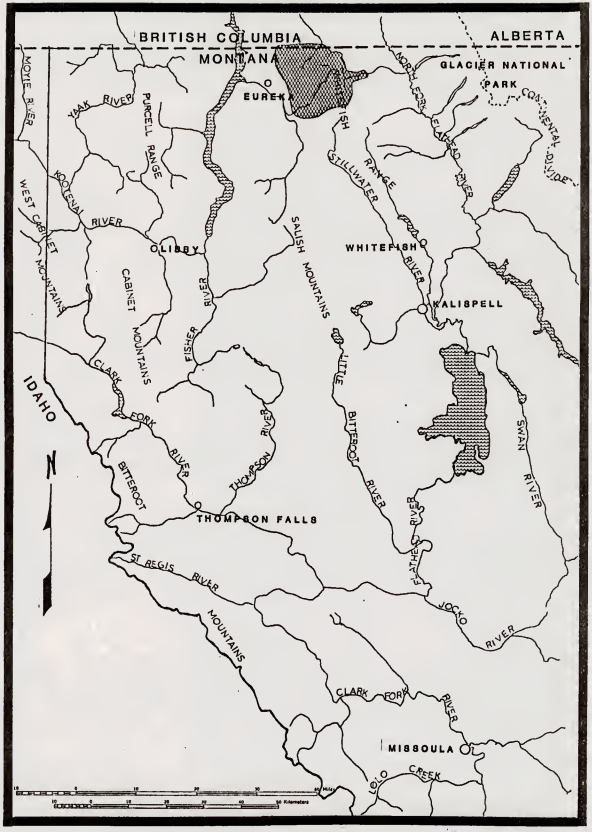


Figure 18. Location of helicopter survey for caribou, March 26, 1983.

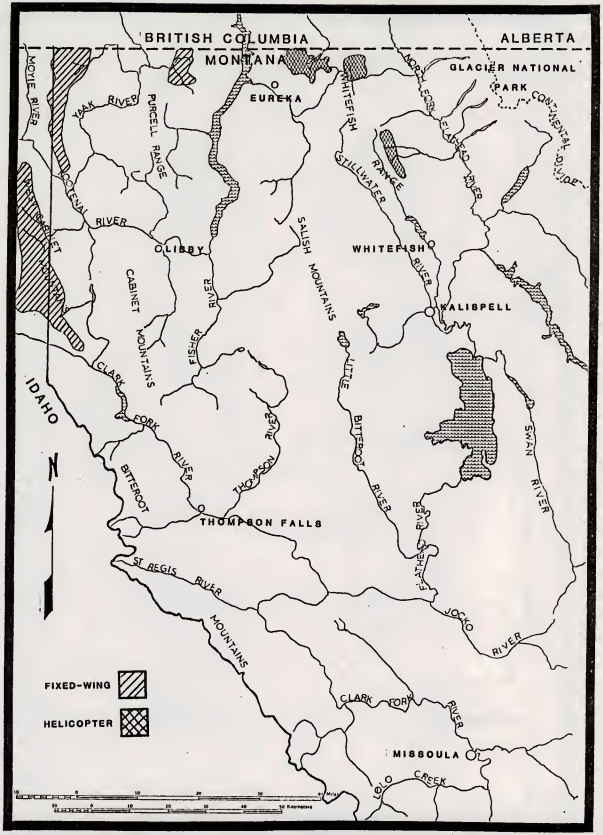


Figure 19. Aerial surveys for caribou, April, 1984.

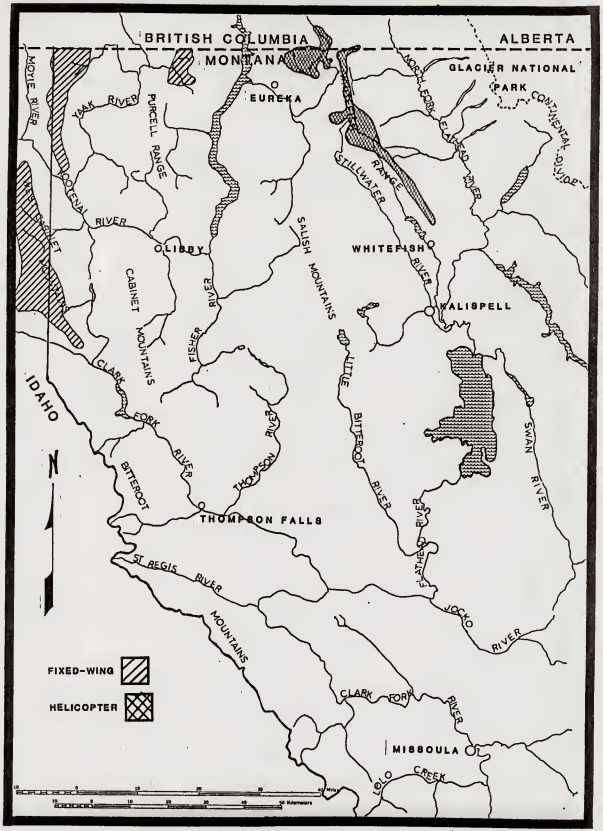


Figure 20. Aerial surveys for caribou, April and May, 1985.

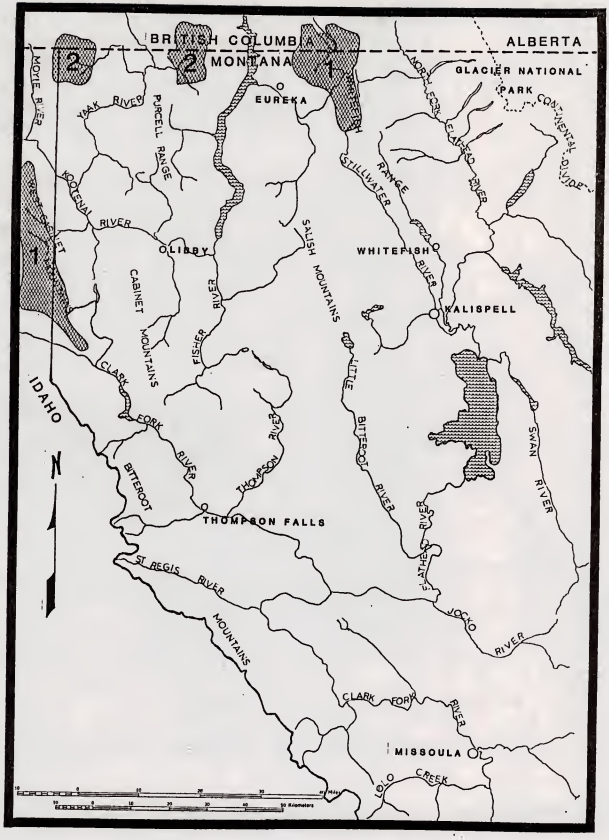
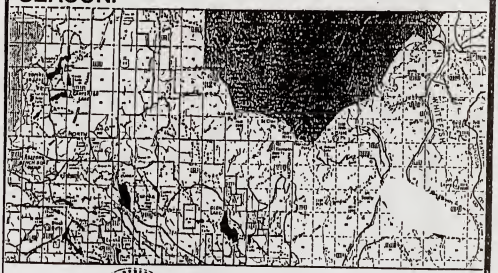


Figure 21. Priority areas for helicopter surveys for caribou, 1986.

RESTRICTED SNOWMOBILE AREA

THE AREA DESIGNATED ON THE MAP BELOW IS UNDER AERIAL SURVEILLANCE TO DETERMINE THE STATUS OF CARIBOU WITHIN THE TEN LAKES AND WIGWAM AREAS.

THIS SNOWMOBILE RESTRICTION WILL BE IN EFFECT UNTIL MAY 1, 1986, SO THAT HABITAT SELECTION BY CARIBOU WILL NOT BE MODIFIED BY SNOWMOBILE ACTIVITY. THIS RESTRICTION IS VOLUNTARY, BUT YOUR COOPERATION IS ENCOURAGED. THE WEASEL LAKE AREA HAS BEEN DESIGNATED AS AN ALTERNATIVE SNOWMOBILE USE AREA THIS SEASON.



Thank you
for your cooperation.

Fortine Ranger District

Figure 22. Location and sign posted for voluntary snowmobile restriction, Fortine Ranger District, 1986.

In an effort to inform and educate Forest Service field personnel and the public about identifying caribou and sign, a caribou identification card was developed, printed, and distributed by the Kootenai National Forest in 1984.

Based upon the aerial and field surveys, there is no evidence of a resident population of caribou within Montana at the present time. The recent reports of caribou suggest that a few caribou may continue to utilize habitat in and adjacent to Montana.

HISTORICAL PERSPECTIVE ON HABITAT

Woodland caribou occupy a wide range of habitats throughout North America, but are most closely associated with the boreal forests. Caribou in the mountains of central and southern British Columbia, northern Idaho, and Washington primarily inhabit the upper elevation spruce-fir forests during late winter, spring, summer, and fall. Lower elevation stands of overmature spruce-fir and cedar-hemlock are used in early winter (Bloomfield 1980, Scott 1984).

Caribou eat a wider variety of plants than other cervids (Skoog 1968, Bergerud 1974), but appear to be dependent upon lichens during the winter (Edwards 1954, Klein 1982). Caribou in the Selkirks feed almost exclusively on arboreal lichens during the winter (Scott 1984). Bergerud (1974) believes that caribou do not require lichens in winter, and in many areas, eat other foods. On the Slate Islands, Lake Superior, Ontario, there are no available terrestrial lichens, and the only substantial available arboreal lichens are above a 1.5 meter browse line; yet there is a density of one caribou per 14 hectares which has exsisted since the 1940's, 768 times the estimated carrying capacity (Bergerud 1978).

At the present time, lichen biomass in the Selkirks appears to be adequate under current caribou densities, and does not appear to be a critical factor influencing winter habitat selection (Scott 1984). A shortage of lichens caused by range destruction are believed to have caused declines in caribou (Leopold and Darling 1953, Edwards 1954, Cringan 1957). Bergerud (1978) argues that range and absolute food shortage have not yet been shown to limit caribou numbers.

The effects of natural and man-caused habitat modifications in the Selkirks is largely unknown but believed to be detrimental (Scott 1984).

Natural forces mentioned as possibly affecting caribou habitat include climate (Layser 1980), wildfire (Edwards 1954, Evans 1960, Freddy 1974), and insect and disease infestations (Evans 1960).

Man-caused forces which have been cited as possibly modifying caribou habitat include timber harvest (Evans 1960, Freddy 1974, Johnson et al. 1981), roads (Evans 1960, Johnson et al. 1981), and mining (Evans 1960).

Climate

Climatic changes are difficult to detect because the changes occur slowly over long periods of time.

Cringan (1957) and Evans (1960) eliminated climate as a factor in the decline of woodland caribou. Layser (1980) felt that changes in climate may have had more of an effect on caribou habitat than originally thought.

The climatic changes that have occurred in northwest Montana since the last glacial retreat, 10,000 years ago, have been described by Hansen (1948). The following is a brief narrative of the climatic changes which occurred: Glacial retreat (10,000 years ago) ⟶ pioneer invaders of lodgepole and whitebark pine ⟶ cool moist period (subalpine fir) ⟶ warming and drying (increase in ponderosa pine) ⟶ xerothermic maximum (8000-4000 years ago) ⟶ cooler, moister (white pine, spruce, subalpine fir, and some hemlock) ⟶ which has persisted to the present.

More recently small climatic changes have been noticed. The 16th through the 19th century has been called the "little ice age" (Layser 1980). There was an unusual wet period around the mid-1800's followed by a drought in the 1880's. From 1880-1940 there was evidence of a temperature rise toward the poles and high altitudes. Since the 1940's the trend has reversed and global surface temperatures have fallen. Since 1971 snow and ice cover has increased 13% and has remained there (Bryson 1974).

Layser (1980) believed the decline of boreal species in the U.S. (lynx, marten, wolverine, and caribou) may have been related to the warming and drying period following the "little ice age" until the mid-1940's (although other man-related factors were also involved). Layser suggested that the reappearance of caribou on historical ranges in the late 1950's was a response to the change in climate.

Wildfire

There has been much discussion as to the effect of wildfire on caribou habitat (Klein 1982). In the past, fire was viewed as detrimental to caribou (Leopold and Darling 1953, Edwards 1954, Evans 1964, Scotter 1967). Since 1967 caribou biologists started to change their opinions on the effects of fire on caribou habitat (Bergerud 1978). In Newfoundland, forest fires had increased lichen forage by opening up the forest canopy, and many heavily utilized lichen-woodland ranges were in existence due to repeated burning (Bergerud 1978). The heterogenity of habitats created by fire are believed to have benefited caribou (Miller 1976, Bergerud 1978). The short-term detrimental effects of fire were usually stressed in the literature, while the long-term effects may be beneficial to caribou (Klein 1982).

Severe wildfire 'holocausts' in which everything is burned to the ground are rare, even the large stand replacing fires in the spruce-fir forests left pockets and basins of unburned timber.

Wildfire was an active ecological force in the study area prior to the 1930's, when suppression became a reality (Barrett and Kilgore 1983).

Barrett and Kilgore (1983) extended the fire history in the N. Fk. of the Flathead drainage back 500 years to the 1470's. They identified 66 fire years in that time period. Between 1655 and 1926 the Mean Fire Interval (MFI) for fires 404-2428 hectares in size was every 16 to 23 years. Major fires greater than 2428 hectares occurred every 54 years. Three major stand replacing fires burned their entire study area and much of the upper North Fork valley between 1655 and 1683. The next stand replacing fire occurred in 1852. Between 1852 and 1926 there was a noteworthy increase in fire frequency and size. They noted that nearly 90% of their study area was swept by fire from 1887 to 1926. The years 1889 and 1910 were severe fire seasons in the North Fork. Steep, upper forest zones showed evidence of total stand replacement. The last major fire in the North Fork valley occurred in 1926 when about 16,190 hectares burned.

A natural fire rotation of 123 years was given by Singer (1975) for the North Fork of the Flathead. He also noted that 81% of his study area burned every century prior to supression.

O'Brien (1969) found that 90% of the reportable fires in G.N.P. occurred west of the Continental Divide, and 95% of those were at elevations less than 2133 m. and 50 % were less than 1500 m.

Arno (1980) looked at fire history in the northern Rockies in different habitat series. The Thuja and Tsuga series is found up to 1500m. in N.E. Washington, northern Idaho, N.W. Montana and S.E. British Columbia where annual precipitation is greater than 81 cm. (Pfister et al. 1977). These series underwent massive crown fires in 1889, 1910, 1919, 1926, and 1934. Several million hectares were burned during these years. Arno noted that studies on the Priest Lake Ranger District in Idaho showed low to medium intensity ground fires occurred in most mature and pre-logged stands in this series.

Fires in the lower subalpine Abies series, were usually stand replacing and occurred at intervals of 150 years plus (Arno 1980). In the upper subalpine Abies series, whitebark pine was the major seral species. Ground fires had occurred in one-third of the mature stands in Montana. Tiny spot fires were most common and of low to moderate intensity (Arno 1980).

The fire history for the northeast portion of the Fortine R.D. (Kootenai N.F.) shows the effect of suppression efforts. Between 1885 and 1939 there were 17 fires 40 + hectares in size that burned approximately 6,524 hectares. The last major fire (40 + hectares) occurred 52 years ago in 1934. Since 1940 there have been 48 recorded fires. Forty-six of the fires were less than 1/10 hectare in size, the other 2 fires were less than 4 and 40 hectares in size.

Major fires in the study area (which occurred in caribou habitat) occurred in 1889, 1910, 1919, 1926, 1931,1934, and 1973. The total area influenced by wildfire between 1885 and 1985 is shown in Figure 23.

Since fire suppression in the 1930's the vegetation in northwest Montana has changed significantly because of the reduced areas burned. The most striking difference is the increase in distribution and density of conifers (Gruell 1983).

Figure 23. Areas influenced by wildfire, 1885-1985.

Blowdown

Winds can affect caribou habitat by blowing over individual trees or stands of mature and overmature spruce and subalpine fir. Small pockets of blowdown throughout the forests occur on a regular basis. A severe windstorm in 1949, had a major effect upon the spruce-fir stands in the upper Yaak, Galton, and Whitefish ranges. Besides the physical loss of trees, and changes in the stand structure, the windfallen timber provided the desireable conditions for increases in the forest insect populations.

Insect Infestations

The spruce bark beetle has had perhaps the most influence on caribou habitat than any other forest insect. The epidemic populations which occurred throughout the study area in the 1950's (Figure 24) resulted in salvage logging, clearcutting, and roading, of previously unaccessible spruce-fir basins.

Timber Harvest

Timber harvest within northwest Montana began in the late 1880's and was limited to the valley bottoms and lower elevations. By the 1940's a majority of the mature to overmature valley bottom forests had been cut-over. The logging of cedar-hemlock stands in the western valleys may have modified any caribou early winter ranges in those areas (Evans 1960).

The spruce bark beetle infestation during the 1950's, brought the logging operations out of the valleys and into the upper elevation spruce-fir basins.

Salvage logging occurred primarily in the upper Yaak, Galton and Whitefish ranges, and the N. Fk. of the Flathead drainage, with some logging in the Cabinet Mountains (Figure 25). Salvage operations continued throughout the 1960's and into the early 1970's. In an effort to control future beetle outbreaks and to help make timber sales viable, additional spruce-fir stands were clearcut.

In the early 1980's spruce bark beetle populations began to increase again. In an effort to control the spread and increase in the beetle populations the U.S.F.S. began baiting, trap tree, and selective tree removal programs in the affected areas. Due to these programs and or natural causes the beetle populations subsided, and the majority of the logging in these areas subsided also.

Roads

Extensive road building into the previously inaccessible backcountry preceeded the logging which occurred in the 1950's. Roads can affect caribou habitat by removing habitat in the road building process itself. The greatest effects that roads have on caribou is the increase in human access, which may lead to direct mortality through poaching and accidental shooting (Evans 1960, Johnson et al. 1981).

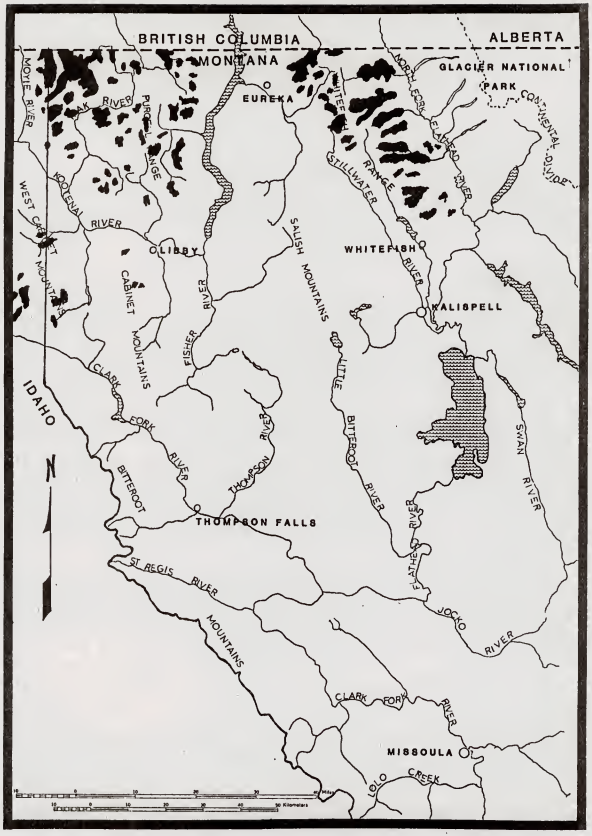


Figure 24. Epidemic populations of spruce bark beetles, 1950's.

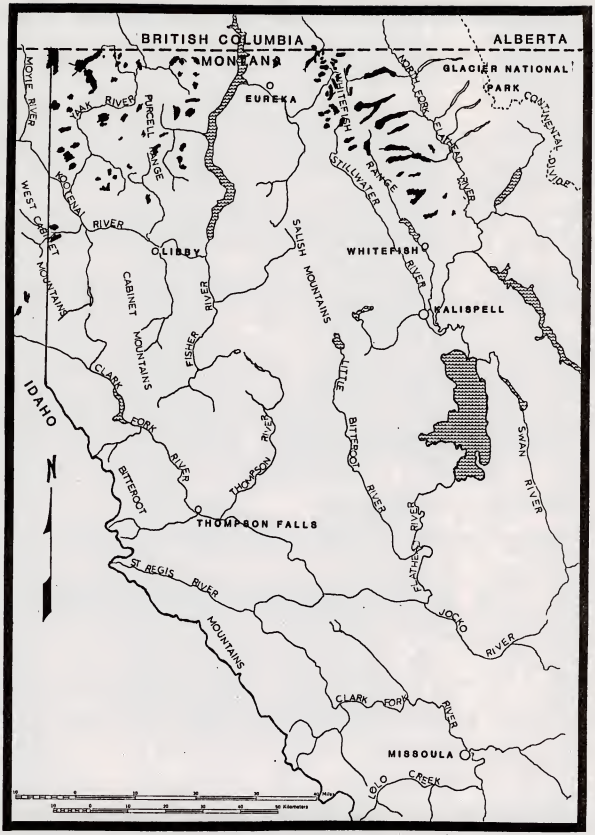


Figure 25. Spruce-fir salvage logging, 1950-1975.

The majority of roads which were built into the higher elevation spruce-fir forests were primarily low-speed, gravel logging roads. Open road densities in the upper Yaak, Galton, and Whitefish ranges were highest during the 1960's and early 1970's. Since the mid-1970's road management has played an important part in reducing the miles of open road.

Mining

Mining began in the late 1800's in northwest Montana. The Cabinet Mountains and Yaak area received the most attention from the miners. Gold and silver mines were scattered throughout the backcountry and were in operation into the 1930's and 1940's (Johns 1970)

Several small boomtowns were located in the western valleys. During 1895 there were up to 1000 men in the Sylvanite area (Evans 1960), and up to 250 men worked the Snowshoe Mine in the Cabinets during the early 1890's (Johns 1970).

Underground mining which occurred in the past was not considered a major force in reduction of caribou habitat. The increased human activity in those areas is believed to have had more of an effect on caribou directly, due to subsistence hunting (Evans 1960).

Hard rock mining continues to be of importance in the Cabinet Mountains with several large companies conducting mining operations, and exploration.

Oil and coal exploration has been and continues to be of interest in the North Fork of the Flathead valley. The increase in human activities associated with the exploration and drilling would have had more of a direct impact on any caribou than actual habitat loss.

Developement and Subdivision

The majority of human settlements were developed in the lower elevations and accessible areas.

Homesteaders began to move into some of the more remote valleys and clear the land during the early 1900's. Homesteads and subsequent developements along the Yaak River, and North Fork of the Flathead may have had an impact on any caribou early winter and spring range.

The National Forests were created around 1906, and the majority of caribou habitat was located on those lands. Settlement and developement brought more people into some of the remote valleys and the direct mortality due to hunting may have had a greater effect on any caribou than any loss of habitat.

Domestic Grazing

The effects of domestic grazing upon caribou habitat is unknown. If any modification to caribou habitat occurred through grazing, it would have been most likely attributed to sheep in the 1930's and 1940's.

The majority of sheep grazing occurred during the summer at high elevations following the large wildfires. During the 1930's up to 2000 head of sheep grazed the Ten Lakes Basin and upper Wigwam drainage (West pers. comm.). This level of grazing occurred in other areas on the Kootenai, 37,000 animal months in 1930, and 45,000 animal months in 1935 on the Flathead National Forest (Evans 1950). Competition on summer range may have been significant between domestic sheep and any caribou.
In addition to any impacts upon the habitat, the presence of herders in the area may have had a direct impact on caribou through hunting (Evans 1960). The transmittal of disease to caribou from domestic sheep has not been documented, but may have occurred.

Prescribed Fire

The use of prescribed fires to maintain vegetation in early successional stages is a relatively knew tool of the white man. Indians were believed to set fires regularly throughout northwest Montana to maintain foraging areas for horses, reduce brush, and possibly even to maintain winter range for deer (Barrett 1977). The majority of the fires that were set occurred in the lower, drier elevations, not considered to be caribou habitat. It is always possible that some of these fires blew up and burned into the higher elevations, but documentation of this is was not found.

The U.S.F.S. used fire to site prep cutting units in many of the upper elevation spruce-fir basins, but most of these were well contained and only consumed logging slash within the unit.

In recent years there has been an increase in the use of fire to maintain deer and elk winter range, and berry patches utilized by grizzly bears.

PROJECTION OF CARIBOU HABITAT

Past natural and man-caused influences on caribou habitat have contributed to the current situation in regards to caribou in Montana. The future management of the habitat in which caribou historically occupied in the past will largely determine the potential of the area to support caribou in the future.

Climate

Currently the climate of the area is in a cool, moist, regime and is dominated by Pacific maritime weather patterns (Dightman 1961). This pattern is expected to continue (Layser 1980), and appears favorable in regards to caribou habitat.

Wildfire

Wildfire is unpredictable and the area is always subject to major wildfires. Suppression techniques are constantly being improved and updated and the chances of a catastrophic wildfire are not considered high.

The current fuel appraisals in the North Fork of the Flathead valley suggests that the fire hazard is currently low to moderate in most stands (Barrett and Kilgore 1983).

Down fuel inventories conducted in the Wigwam-Ten Lakes drainages in 1976, by the Fortine Ranger District, showed an average of 23 tons/acre. Upper elevation basins and ridges near Green Mountain had low accumulations, about 4 tons/acre. Highest concentrations were in the Indian Creek drainage, about 48 tons/acre. These fuel loadings are believed to be about average for the elevation and stand structure (Gauger pers. comm.).

Blowdown

It would be impossible to predict the amount of blowdown which may occur in the future. Spruce-fir stands on the edge of cutting units and natural openings are generally more susceptible to windthrow.

Insects and Disease

Most spruce bark beetle epidemics are cyclic, and the risks are greatest when large concentrations of windfall or logging slash are left. Forest Service policy of salvaging windthrow and burning logging slash reduces the potential of major population buildups and spread. If near epidemic populations are reached, the Forest Service has the options of the baiting and the trap tree programs, which may be effective in controlling the beetles population and the spread of bettles into adjacent stands.

Timber Harvest

In general, timber harvest in the mature and overmature high elevation spruce-fir basins has been greatly reduced on the Kootenai and Flathead National Forests. Since the extensive harvest which occurred in these areas in the 1950's-1970's, other resource demands have been recognized and timber harvest is less of a driving force. The demand for wilderness, non-motorized recreation, big game summer range, old growth, and maintaining grizzly bear and wolf habitat, have removed a major portion of historical caribou habitat from future timber harvest activities (Figure 26).

The majority of timber harvest activity in southeast British Columbia is located in the N. Fk. of the Flathead drainage, the Yahk, Gold Creek, and Bloom Creek drainages.

In just the past few years, stands of old growth were designated on each Ranger District on the Kootenai and Flathead National Forests. After preliminary designations it was discovered that some of the stands did not fit the old growth definition,changes and continued updating is expected to continue. Identification, designation, and protection of the old growth stands of cedar-hemlock and spruce-fir within the historic range of caribou would be a primary concern in terms of caribou management.

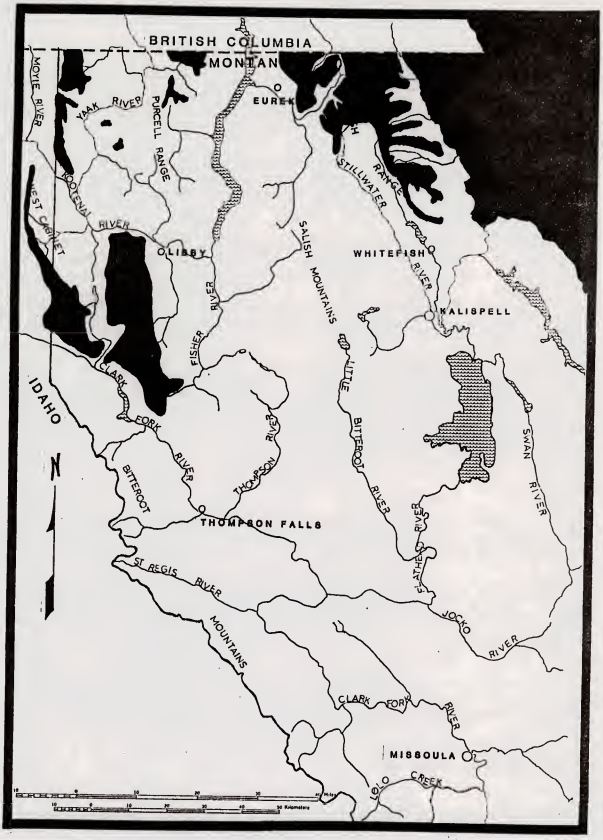


Figure 26. Areas currently or proposed to be removed from timber harvest (National Parks, Wilderness areas, roadless areas, and semi-primitive non-motorized recreation).

The current direction has been to designate approximately 8% of the District stands for management as old growth.

Roads

The majority of the transportation system on the Kootenai and Flathead National Forests is in place. Future road building activities will be directed towards completing the transportation system and local access roads used for timber harvest.

Road management is currently receiving a great deal of attention on the National Forests. In the past five years a majority of the old logging roads in the upper elevation spruce-fir basins have been closed by gates and barriers, primarily for grizzly bear and big game summer range security areas.

On the Fortine Ranger District alone, 72% of the area east of Highway 93, and west of the Flathead Forest boundary, has been proposed as either wilderness or semi-primitive, non-motorized recreation (approximately 39,000 hectares).

In the future it appears that fewer new roads will be built into the upper elevation spruce-fir forests, and those that are, will most likely be closed after the activity is completed.

Road building in adjacent British Columbia has not decreased, and additional roads are being built into previously unroaded areas. Road building is expected to continue at its present pace until timber harvest subsides. The majority of the logging roads are not closed after harvest is complete, and access is only limited by the condition of the roads and snow.

Mining

Interest in hard rock mining in the Cabinet Mountains has increased, and developement of large silver mines in the southern portion of the Cabinets is expected to occur in the future.

Oil and gas exploration in the Whitefish Range and Yaak area has subsided in the past few years, on the U.S. side, and future exploration and drilling plans are not known at this time. Exploration and drilling in the N. Fk. of the Flathead drainage, in British Columbia, is continuing, but future planned activity is unknown.

Developement of the Cabin Creek coal mine, located in the N. Fk. of the Flathead drainage in southern British Columbia, is currently still being proposed, whether or not this mine will be developed is not known.

Settlement and Developement

Most of the historic caribou habitat is located on National Park, State, Federal, and Provincial Forests. Private subdivisions along the Yaak, North Fork of the Flathead valley, and the Bull River valley are the major private developements within the historical range of caribou.

Continued subdivision of homesteads and ranches for summer and year round residences increase the amount of human activity in these areas. With the increase in activity comes possible increase in poaching and wildfire.

Grazing

The grazing of domestic livestock in the lower elevations is expected to continue, but the past practices of sheep grazing in the higher elevations is not expected.

Prescribed Fire

The increased use of prescribed fire to maintain elk and deer winter range, grizzly habitat, and to prepare harvested units for regeneration, is expected to continue. The use of fire in these situations are not considered detrimental to caribou habitat, and may in fact be beneficial in maintaining spring range.

CRITERIA FOR MAPPING HABITAT

Caribou use of habitat in Montana is unknown. Mapping caribou habitat on that basis would be extremely subjective at best. If the assumptions can be made that caribou in and adjacent to Montana utilized habitat similar to caribou in the Selkirks, and the habitat in Montana was similar to the Selkirks, then the habitat mapping criteria developed for the Selkirks may be applied cautiously to Montana.

By monitoring radio collared caribou in the Selkirks, Scott (1984) determined that caribou exhibited distinct seasonal habitat selection patterns. Seasonal use was divided into spring and calving, summer, rut, early winter, and late winter. Comparing his results with the known location and season of credible reports from Montana, it appears that habitat use patterns are similar.

In general, the habitat of northwestern Montana appears similar to the habitat in the Selkirks. The habitat types are similar (Daubenmire and Daubenmire 1968, Pfister et al. 1977), and landtypes such as glacial cirque basins, ridgetops, and valley bottoms are also comparable. Vegetation is also similar with whitebark pine and and subalpine fir at the higher elevations and ridgetops, stands of spruce-fir above 1500 m, and cedar-hemlock stands in the lower elevations and valleys. This vegetation pattern is similar throughout northwest Montana except for the Galton and Whitefish ranges, and the N. Fk. of the Flathead, where stands of cedar-hemlock are very scarce or non-existent. In these areas the upper valleys are dominated by either spruce-fir stands or seral stands of larch and lodgepole. The lower valleys are dominated by lodgepole, douglas-fir,larch, and ponderosa pine. Understory vegetation within the spruce-fir stands and cedar-hemlock stands in Montana are similar in species composition to the Selkirks (Daubenmire and Daubenmire 1968).

Preliminary food habits of caribou in the Selkirks (Scott 1984), show that they forage on plant species that are also found in northwest Montana. Arboreal lichens, which constitute the primary winter diet of the Selkirk caribou are

also present in varying quantities throughout northwest Montana. No extensive lichen studies have been conducted in the study area to determine lichen biomass, and therefore no quantitative comparisons can be made to Detrick's (1984) work in the Selkirks. Based upon occular estimations, Carlton (pers. comm.) feels that lichen loads in portions of the upper Yaak, Galton and Whitefish ranges are similar to the Selkirks, but on the average may be less.

Another important aspect of caribou habitat is snow depth and compaction. April snow depths from snow courses in Montana vary from location to location, but in general are less than snow depths from similar elevations in northern Idaho. Dates when snow compaction occurs in the Selkirks and northwest Montana appear to coincide.

Based upon the acceptance of the assumptions, the use of Idaho's criteria for mapping caribou habitat (U.S.D.A. 1985) appears to have validity for mapping caribou habitat in northwest Montana and adjacent Idaho, and British Columbia.

MANAGEMENT CONCERNS

Management concerns which have been identified in past and current research as potentially affecting caribou populations and use of habitat include habitat destruction (refer to historical and future habitat perspectives), productivity, predation, disease, hunting, collisions with vehicles, heavy snowmobile use, unstocked ranges, accidents, and research and handling.

Productivity

Productivity of caribou is low compared to other cervids. Twinning is unusual and females usually do not breed until between 29 and 41 months of age (Bergerud 1978).

This low productivity coupled with a high rate of mortality, through predation and/or hunting, has reduced caribou populations in the Northwest Territories (Banfield 1954), and Newfoundland (Bergerud 1978).

In the Selkirks, Scott (1984) found that during many years natural calf mortality could be expected to be slightly less or roughly equal to recruitment.

Predation

Predation has been cited as the most important cause of death to caribou, particularly calves (Bergerud 1978). If wolves and/or grizzlies are abundant, 1 per 65-130 square kilometers, up to 85% of the calf crop may be affected the first year (Bergerud 1978). An 11-year study in Newfoundland found that lynx were responsible for 75% of the dead or dying calves (Bergerud 1978). Caribou in small groups are considered more vulnerable to predation, and wolves were able to secure an animal from nearly 50% of the groups tested (Haber 1977).

Evans (1960) and Freddy (1974), both dismissed predation as an important factor on caribou in the Selkirks, although black bears are abundant, and mountain lions, coyotes, lynx, grizzly bears and occassionally wolves are present (Carlton pers. comm.). These same predators are also present in Montana, and in the N. Fk. Flathead drainage there is a relatively high grizzly population, 1 per 15 square kilometers (McClellan 1984). A pack of about 12 wolves has recently become established in the drainage (Fairchild pers. comm.). The effect these and other predators had on caribou in the past, and the potential future effects on any caribou in Montana are unknown, but may be very significant.

Hunting

Bergerud (1974) believes that Alaskan herds of caribou declined because of heavy hunting of adults in the absence of satisfactory survival of the calves. Declines of caribou in Wahington, Idaho, and Montana have also been attributed in part to legal and illegal hunting (Evans 1960).

Human induced mortality of caribou in Montana, historically, may have been a primary factor in the decline of caribou. Schaeffer (1940) stated that when the Kutenai Indians hunted caribou they would often "shoot as many as possible before the animals took flight". Evans (1960) felt that the early miners, homesteaders, trappers, and market hunters killed caribou for food whenever they were encountered. Even after the season on caribou was closed in Montana illegal kills still occurred. While the actual number of reported kills may seem low, the number of reported kills in relation to the total number of caribou reports appears significant.

Poaching has been identified as being of concern in the Selkirks (Johnson et al. 1981, Scott 1984). Kills from mistaken identity and deliberate poaching of caribou is related to human access into caribou habitat (Johnson et al. 1981). Public education and support are critical in order to get a handle on poaching. Reducing human access through road management is also an important tool in reducing caribou mortality.

Disease

The meningeal worm (Parelaphostrongylus tenuis) has been blamed for caribou population declines in eastern North America. The meningeal worm has been an important consideration in the planning of the recovery of caribou in the Selkirks (U.S.D.A. 1984). At the present time the worm has not been found west of Saskatchewan,but biologists should be on alert for its presence, as it may eventually show up in the area (Burke and Johnson 1984).

Collisions with vehicles

Collisions with motor vehicles has been one of the major causes of mortality to the Selkirk caribou herd in the past decade (Johnson et al. 1981). Collisions with vehicles would probably not be a major concern like it is in the Selkirks, where B.C. Highway 3 bisects prime caribou habitat. Most of the roads in Montana's historical caribou habitat are essentially low-speed, gravel roads. Roads that might be of concern that bisect potential caribou habitat is the

Yaak 92 road, North Fk. of the Flathead road, extreme western portion of Highway 2 (near the Idaho line), and Highway 56 along the Bull River valley.

Snowmobile use

Heavy snowmobile use has been identified as influencing habitat use by caribou in British Columbia (Simpson 1984). The late winter habitat near Revelstoke B.C. is located on high elevation, broad, accessible plateaus (Summerfield pers. comm.), a favorite snowmobiling area. Late winter range in the Selkirks is on upper elevation ridges, which are more difficult for snowmobiling. Potential late winter range in Montana is similar to that in the Selkirks, and do not receive high levels of snowmobile use. The Ten Lakes Basin and upper Wigwam drainage in the Galton Range have received heavy snowmobile use in the past. The majority of the snowmobilers do not get up into the higher spruce-fir basins and ridges because it is too difficult for the average snowmobiler. Snowmobile use throughout northwest Montana is expected to increase in the future as the machines and drivers skills steadily improve. The effects of snowmobiles on caribou habitat use needs more study in order to come to any recommendations and conclusions. It is generally accepted that snowmobile activity should be closely monitored on critical winter range areas.

Unstocked ranges

In the past, wildlife managers believed it was not feasible to restock caribou range because they thought caribou were wilderness animals that required climax lichen stands far removed from civilization, but that belief has changed in recent years (Bergerud 1978). Bergerud believes that "opportunities do exist for reestablishing old herds and new herds, even if the flora is presently not what it was".

Idaho is planning to reintroduce caribou into the southern portion of the Selkirks over the next 3 years, beginning in 1986. The potential for future reintroduction of caribou into portions of historical range in Montana may exist.

Accidents

Accidents are not believed to be a major concern, but animals have died in avalanches, falls, and drowning.

Research and handling

Research and handling can cause stress to caribou and mortality has occurred during drugging and handling procedures (Carlton pers. comm.). Care and concern for the animal is of primary importance to the researcher, but accidents can occur and that fact must be taken into account.

FUTURE MANAGEMENT EFFORTS

Based upon historical reports, habitat conditions (past, current, and future), and management concerns, the historical range of caribou in Montana was reviewed to direct any future management efforts (Figure 27).

Glacier National Park- this area was identified as having the highest capability of supporting caribou in the future. Wildfire has had a major effect on portions of the park, but there appears to be habitat available which could most likely support caribou (Miller 1976). The size of the Park and the lack of habitat modification by logging, roads, and mining are also favorable. Poaching, snowmobiling, and harassment of caribou would not be of concern. Predation would be of primary concern because of the high grizzly bear density and increase in wolves. Since there is no known adjacent population of caribou in Canada from which dispersing animals could repopulate the Park, the only way to have caribou would be through reintroductions.

Whitefish and Galton ranges- this area has had some of the most recent reports of caribou. The area has been impacted by wildfire, timber harvest, and roads, but still appears to have habitat suitable to support caribou. Future man-caused habitat modifications are not the primary concern in this area. There are large areas designated as roadless and the entire area is designated as grizzly habitat which means that any proposed activities will be closely evaluated. Poaching would be a primary concern in this area as would be predation due to the relatively high grizzly bear density and potential increase in the wolf population. Snowmobiling has the potential to be a concern. As in the case of Glacier, there is no known population of caribou in Canada adjacent to this area, and the only way to reestablish caribou would be through reintroductions.

Cabinet Mountains- due to topography, the west Cabinets may have a better potential to support caribou than the main Cabinets. Both areas are relatively remote and unroaded. Both areas are believed to have habitat which could support caribou. Wildfires and timber harvest have had little effect on these areas (except for the southern portion of the main Cabinets). The majority of the potential caribou habitat in the west Cabinets appears to be located in Idaho. Since there is no known population of caribou adjacent to the Cabinets, reintroductions would be necessary to reestablish caribou.

Yaak drainage- although historically this area had the most reports of caribou, modification of the habitat through wildfire and timber harvest has had a major impact on caribou habitat (Carlton 1983). Poaching would be a major concern as would additional timber harvest. The Yaak area is in a unique position , because it is located only 40 km from a population of caribou in British Columbia, and is also closest to the Selkirk population. Continued attention should be paid to this area in case any of the caribou from B.C. move into the Yaak.

Bitterroot Mountains- although this area has reported caribou in the past, no reports of caribou since the 1960's have been reported. Interest in this area for supporting caribou is low and no future

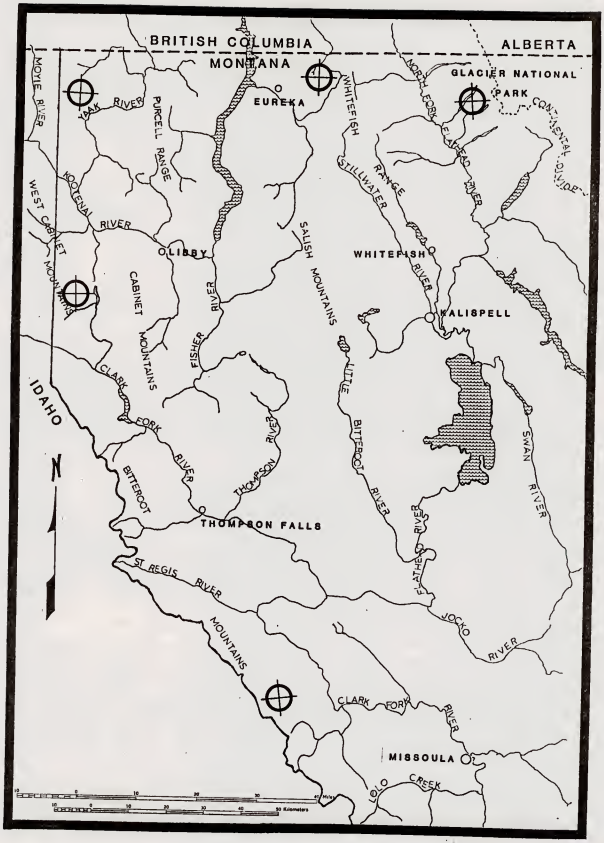


Figure 27. Historical range of caribou reviewed to direct any future management efforts.

managent efforts are recommended.

The ability of these areas to support viable populations of caribou are unknown and further habitat research would be required before any conclusions could be drawn. Bergerud (1978) believes that caribou are an adaptable species if man will give them a chance.

SUMMARY

Historically caribou occupied portions of northwest Montana. The actual or greatest number of caribou that occurred in the State will most likely never be known.

Use of caribou for food by the Kutenai Indians prior to the 1900's has been documented, and it has also been recorded that early homesteaders reported seeing and killing caribou.

Since the 1900's there have been 133 reports of caribou within Montana. Nine were confirmed reports, 14 listed as probable, 40 as possible, 25 as unknown, and 45 from the literature. The last confirmed report was that of a carcass in the Yaak in 1958. Since that time there have been scattered reports of animals, tracks, and even carcasses and antlers, but none of which could be substaniated and confirmed.

Aerial surveys conducted by biologists using helicopter and fixed-wing planes during March, April, and May of 1983, 1984, 1985, and 1986, resulted in no conclusive evidence of caribou within Montana.

The present status of caribou in Montana can most likely be attributed to a number of factors:

1. Caribou reached the southern extent of their range in Montana.
2. Hunting of caribou by Indians, early settlers, and predators may have had an impact on caribou in combination with the low reproductive potential of the species.
3. Large destructive wildfires and timber harvest may have adversely impacted important portions of caribou habitat.
4. Increased public access through road building into previously inaccessible habitat resulted in illegal kills- which would have been detrimental to a small population.
5. Dispersal of caribou, in sizeable numbers, from populations in British Columbia have not occurred in recent years.

There has been no intensive caribou habitat work done in Montana. The few preliminary habitat assessments that have been conducted indicate that there are areas within northwest Montana that appear to be contain suitable caribou habitat.

In the future, if caribou are ever to become established within Montana, then it would most likely have to be through reintroductions.

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APPENDIX 1. Chronology of caribou reports in northwest Montana*, adjacent Idaho and Canada (1900-1985).

Year Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade: 1900-1909						
Early 1900's	Dwinelle	Evans	S	?	5	*Crossing Yaak R. near Sylvanite (Yaak)
Early 1900's	Dwinelle	Evans	K	1	5	*Surveyor killed one near Yinkum Cr. (Yaak)
Early 1900's	Stanley	Evans	K	?	5	*Family used to kill caribou in meadow, lower Bull Lk. (W.Cabinets)
1905	Kent	Flinn	K	3	5	Buckhorn Ridge (Yaak)
1905	Higgins	Flinn	K	7	5	Buckhorn Ridge (Yaak)
1907	Price	Flinn	S	?	5	Old caribou trail on Buckhorn Rdg. (Yaak)
1909	Monks	Flinn	A	?	5	*Antlers near Hidden Lk. (Yaak)
Decade: 1910-1919						
1910-1913	Boyd	Evans	S	Bands	5	N. Fk. Yaak R. just in B.C. (Yaak)
1910-1919	Rouse	Carlton	S	Some	5	*N. of Kootenai Falls (Yaak)
1912-1914	Deshazer	Manley	A	?	3	*His dad found antlers in a basin north of Hawkins Lk. (Yaak)
1913	Beebee	Carlton	S	Small band	2	*N. Fk. Flathead R., G.N.P. wildl. Obs. cards.
1915	Beebee	Evans	K	1	5	*Homesteader killed one at Red Meadow Cr. (N.Fk. Flathead)
1915	Beebee	Carlton	S	Some	2	*Homesteader observed some near Red Meadow Cr. (N.Fk. Flathead)
1915	Grush	Evans	S	?	5	*Crossing Yaak R. above Sylvanite (Yaak)
1916	Curtiss	Manley	K	1	2	*His dad had photo of a caribou hanging in a camp near the B.C. Border (Yaak)
1918	Wurtz	Evans	S	Occurred	5	*Trail Cr. (N. Fk. Flathead)
1918	Stines	Evans	S	Band	5	*Head of Coal Cr. (Whitefish Range)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade 1910-1919 (cont.)							
1919		Dwinelle	Evans	S	5	5	Callahan Cr. in Idaho (W. Cabinets)
1919		Baldwin	Evans	S	?	5	*Crossing Yaak R. above Sylvanite (Yaak)
Decade: 1920-1929							
1920's		Fauth	Manley	K	1	1	*Antlers from a mature bull believed to have been killed in the "Eureka MT. area" are in the possession of P. Fauth of Whitefish MT. (Galton Range)
Early 1920's		Klehm	Evans	S	1	5	*One caribou seen in the W. Fk. Yaak R. with mule deer (Yaak)
1920		Dwinelle	Evans	S	Occurred	5	*Yaak area
1920-1929		Dwinelle	Evans	T	?	5	*Meadow Cr. (Yaak)
1922		Dwinelle	Evans	S	Occurred	5	*Little Spar Lk. (W. Cabinets)
1925		Dwinelle	Evans	K	1	5	Goat Mountain (Yaak)
1925		Dwinelle	Carlton	A,T	?	5	*S. Fk. Meadow Cr. (Yaak)
Late 1920's		Maloney	Layser	K	3	5	Howe Mountain (W. Cabinets)
1926		Dwinelle	Evans	T	?	5	*Red Top Cr. (Yaak)
1926	Fall	?	Carlton	K	1	2	*Bull killed by Kai'na tribe near Logan Pass (G.N.P.)
1927		Seton	Evans	S	Several	5	*Guides reported caribou near Trail Cr. (N. Fk. Flathead)
1927		Dwinelle	Evans	S	7	5	*E. Fk. Yaak R. (Yaak)
1927		Grush	Evans	A	?	5	*Basin Cr. (Yaak)
1929		Atcheson	Evans	K	2	5	*One male, one female killed near Geiger Lk. (Cabinets)
1929		Ruhle	Evans	S	14	5	*Cyclone Lk. (N. Fk. Flathead)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade: 1930-1939							
1930's		R. Kajawa	Manley	S	Some	3	*Observed caribou several times in drainages from Fourth of July Cr. to N.W Peaks (Yaak)
1930's		R. Kajawa	Manley	S	Some	3	*Caribou Cr. (Yaak)
1930's		L. Kajawa	Manley	S	1	3	*His father shot and wounded one. Wapiti Mtn.,(T27N,R28W,S31)
1930's		R. Kajawa	Manley	S	Some	3	*South of Great Northern Mtn., toward Wanless Lk.
1930's		R. Kajawa	Manley	S	Common	3	*Upper cedar cr. on the Falls Cr. side (Cabinet Mountains)
1930's		R. Kajawa	Manley	S	Some	3	Head of Keeler Cr. (W. Cabinets)
1930's		Curtiss	Manley	S	Some	3	*Wigwam R. above present site of the Wolverine bridge (Galton Range)
1930's	Winter	McDonald	Manley	S	?	4	*Upper Wigwam R. while trapping (Galton Range)
1930's	Winter	Shea	Manley	T	?	4	*Therriault & Wolverine Lks. (Galton Range)
1930's	Summer	R. Kajawa	Manley	S	Several	3	*Wigwam R. area while chasing fire (Galton Range)
1930		?	Carlton	S	Multiple	2	Waterton Park Supv. of Can. For. reported presence of caribou. (Waterton N.P.)
1930	April	Nelson	Evans	S	1	1	*Park Ranger observed one on Starvation Ridge (G.N.P.)
1932		Schoenberger	Flinn	S	1	5	*Big Prairie (G.N.P.)
1932	Summer	Guides	Evans	S	?	5	*Highline Trail between Granite Pk. and Fifty Mtn. Camp (G.N.P.)
1933	January	Nelson	Manley	S	8-12	3	*Lolo pass (Bitterroot Mtns.)
1933		Carvey	Manley	K	1	3	*Father shot one along the Canadian Border. (Galton Range)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade 1930-1939 (cont.)							
1935	Summer	West	Manley	S	4	1	*Watched most of the summer in Blacktail Basin (S14,T37N,R26W) (Galton Range)
1935		Vinlon	Flinn	S	Some	5	*Pete Cr. Meadows (Yaak)
1936		Breitenstein	Evans	S	2	5	*Hellroaring Cr. (Yaak)
1936	Summer-Nov.	Fenn	Manley	S	6	1	*Stayed around Mt. Obermayer all summer (Yaak)
1936	Winter	Carvey	Manley	S	11	3	*Head of Caribou Cr. while trapping (Yaak)
1937	Winter	Carvey	Manley	S	3	3	*Caribou Cr. while trapping (Yaak)
1937		Brill	Evans	S	Some	5	*Kishanehn Cr. (N. Fk. Flathead)
1939		Ring	Evans	T	?	5	Kafka Mtn. in Idaho (W. Cabinets)
Decade 1940-1949							
1940's		Lindsey	Evans	S	35	5	*Pine Cr. near Black Diamond Mine (Yaak)
1940's		Atcheson	Evans	K	2	5	*Yaak
1940's		Peterson	Evans	S	5	5	*N. Fk. Flathead R.
1940's		G. Miller	Manley	S	7	3	*Near Therriault Pass (Galton Range)
1940's		G. Miller	Manley	K	1	3	*Knew of someone that shot one of the caribou reported above (Galton Range)
1940's		D. Miller	Manley	T	?	4	*Between Big and Little Thorriault Lakes (Galton Range)
1940		Lockwood	Manley	S	3	3	*On ridge from Hensley hill to community hall (Yaak)
1941	Summer	Fluid	Manley	S	12	3	*Caribou Cr. (Yaak)
1943	Summer	West	Manley	S	4-5	2	*Bluebird Basin (Galton Range)
1945		Scribner	Evans	S	11	5	*North side Dad's Pk. (Cabinets)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Late 1940's	Summer	G. Miller	Manley	S	11	3	*Blacktail Basin (Galton Range)
1946	Summer	Lockwood	Manley	S	1	3	*Lap Cr. side of Garver Mtn. (Yaak)
1946		Aemessegar	Manley	S	6	3	*Between Bluebird and Wolverine Basin (Galton Range)
1947	March	Ellis	Manley	T	?	4	*Bluebird Basin while running snow surveys (Galton Range)
1947-1948		Castella	Carlton	K	1	1	*Trail Cr. area by a logger named DePue.
1948	March	Ellis	Manley	T	?	4	*Bluebird Basin (Galton Range)
1949	March	Ellis	Manley	T	?	4	*Bluebird Basin (Galton Range)
1949		?	Lechleitner	S	?	4	*Animals believed to have entered from B.C. (G.N.P.)
Decade: 1950-1959							
1950's		?	Evans	K	?	5	*Carcass from Yaak area
1950's		L. Kajawa	Manley	S	1	3	*One ran down road in front of his vehicle near Winkum Cr. (Yaak)
1950's		Reedy	Evans	S	3-4	5	*Seen at different times in the Yaak
1950's	Summer	Roose	Manley	S	8-10	3	*Lewis Cr. while spruce logging (Whitefish Range)
1950's	Fall	L. Kajawa	Manley	S	12-15	2	*Observed several times in Horse Cr. while hunting (T29N,R32W,S1) (Cabinet Mountains)
1950's	Fall	L. Kajawa	Manley	K	1	2	*Someone had mistakenly shot a bull caribou thinking it was an elk. (Cabinet Mountains)
Early 1950's		Castella	Carlton	K	2	1	*Remains of two illegally killed were found in the upper Yaak. The meat had been taken, heads and legs were left. Observed at the Dirty Shame by a number of people. (Yaak)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade: 1950-1959 (cont.)							
1952		Fisher	Flinn	S	2	5	Deer Cr. Basin in Idaho. Near Buckhorn Ridge (Yaak)
1952	Feb.-March	Maloney	Layser	K	2	5	Sugarloaf Mtn. in Idaho (T55N,R3E,S4) (W. Cabinets)
1953	Spring	Maloney	Layser	S	4	5	Near Moose Lk. (T58N,R5E,S29) in Idaho (W. Cabinets)
1953		Smith	Flinn	S	7	5	*Yaak R. and B.C. Border (Yaak)
1953	Late Fall	Nelson	Manley	T	?	4	*Between the West and N.Fk. Yaak R. while spruce logging (Yaak)
1953	June	D. Miller	Manley	S	11	2	Watched with surveyors in the Wigwam burn in B.C. while locating Wigwam rd. (Whitefish Range)
1953	Fall	T. Burk	Manley	T	?	4	*Tracks from Rich Cr. to the Wigwam and into B.C. (Galton Range)
1954	Spring	Gibbs	Flinn	S	8	5	E. Moyie R. in Idaho
1954	Summer	A. Burk	Manley	S	1	3	*Ran down road in front of his truck about 1/2 mi. past Wickiup Cr. (Galton Range)
1955		Bache	Manley	S	Small group	3	*Upper Pete Cr., while logging (Yaak)
1955	Nov.-Dec.	Nelson	Manley	T	?	4	*Upper W. Fk. Yaak while spruce logging (Yaak)
1955	Winter	Nelson	Manley	T	?	4	*Upper Spread Cr. while spruce logging (Yaak)
Late 1950's		Ladenburg	Evans	S	Some	5	*N. Fk. Flathead
1956	Jan. 19	Schrader	Flinn	S	2	5	Deer Cr. Basin in Idaho (Yaak)
1956	Spring	Navratil	Evans	T	?	5	*Between Blueblrd and Wolverine basins, heading into Wigwam (Galton Range)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and comments
Decade: 1950-1959 (cont.)							
1955	Fall	Norman	Flinn	S	1	5	*Spread Cr. (Yaak)
1956	Fall	Slack	Manley	S	5	3	*East of Wam Cr. in Wigwam drainage while logging (Galton Range)
1956	December	Wurtz	Evans	S	1	5	*Observed by logger (N.Fk. Flathead)
1956	December	Dwinelle	Evans	K	1	1	*Photograph of carcass in Western News (Yaak)
1956		McDougall	Evans	T	1	5	Tracks of single animal at Sage Cr. in B.C. (N. Fk. Flathead)
1957		Vinion	Flinn	S	7	5	*Upper Pete Cr. drainage (Yaak)
1957		McDougall	Evans	T	2	5	Sage Cr. in B.C. (N. Fk. Flathead)
1958		Sanderson	Evans	K	1	5	*Carcass found American Cr. (Yaak)
1958	Fall	L. Miller	Manley	T	1	4	*Blacktail Cr. (Yaak)
1958		McDougall	Evans	T	3	5	Sage Cr. (N. Fk. Flathead)
1959		?	Evans	S	13	5	*Hadley Pk. near Thompson Falls (Cabinets)
Decade: 1960-1969							
1960's	Summer	Curtiss	Evans	S	Some	3	*Head of Blacktail Basin (Galton Range)
1960		?	Layser	K	1	5	*Near Phillips (Okago) Lk. (Yaak)
1960		Evans	Evans	S	Some	1	*On ridge between N.W. Peak and Buckhorn Mtn. (Yaak)
1960	Spring	Karnes	Manley	S	2	4	*Crossing field near present site of Libby Jr. High (Cabinets)
1960		?	Evans	S	?	5	*Near headwaters of Blackfoot R.
1961	Summer	Johnson	Manley	S	6	3	*Weasel Cr. drainage (Whitefish Range)
1961		G. Miller	Manley	S	1	3	*Mature bull on lower Burma road (Galton Range)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade: 1960-1969 (cont.)							
1962	Summer	Johnson	Manley	S	6	3	*Near Warm Cr. (Galton Range)
1962	Summer	A. Burk	Manley	T	?	4	*Caribou Cr. (Yaak)
1962		A. Burk	Manley	S	11-14	3	*Loggers observed in Caribou Cr. (Yaak)
1962	Summer	?	Layser	S	2-3	5	*Forest Service trail crew reported near Wanless Lk. (Cabinets)
1963		Labrier	Flinn	T	?	5	*Marmot Mtn. (Yaak)
1963		Beattie	Manley	S	1	2	*Mature bull near Lolo Pk. (Bitterroot Mountains)
1964	Winter	Sume	Manley	T	?	4	*Upper Pete Cr., spruce logging (Yaak)
1965	Fall	?	Layser	S	2	5	Bear hunter spotted at head of Morris Cr. (T56N,R3E,S16) in Idaho (W. Cabinets)
Mid 1960's	Fall	Pluid	Manley	S	14	3	*Ridge above Blacktail Cr. (Galton Range)
1967	February	Calclough	Layser	S	3	2	*Caribou Cr. (T37N,R30W,S10) (Yaak)
Decade: 1970-1979							
Early 1970's	Fall	L. Kajawa	Manley	T	?	4	*Clark Mtn. (T35N,R33W,S25) (Yaak)
Early 1970's	Fall	Pluid	Manley	S	7	3	*Clearcut in Blacktail Basin (Galton Range)
Early 1970's		Brennan	Manley	K	1	2	*Antlers of mature bull in the possession of Brennan. Exact location and original owner unknown. (Yaak)
1970	Fall	McAtee	Manley	T	?	4	*Frozen Lk. area (Whitefish Range)
1970	December	?	Layser	S	1	5	East Fk. Cr. in Idaho (T57N,R3E,S28) (W. Cabinets)

APPENDIX 1. (continued)

Year	Month	Observe	Source	Type[1]	Total	Rating[2]	Location and Comments
Decade: 1970-1979 (cont.)							
1971	February	Maloney	Layser	S	5	5	*On logging road southwest of Fatman Mtn. (T27N,R33W,S20) (W. Cabinets)
1972	Summer	Curtiss	Manley	S	13	3	*Ten Lakes Basin (Galton Range)
1973	Summer	Mayer	Manley	K	1	2	*Illegal kill, meat taken. Head hide, and feet left. Mr. Mayer thought it was a female. He could not pinpoint the exact location where he discovered it. (N. Fk. Flathead)
1974	November	Burrell	Carlton	T	5-6	4	*Caribou Cr. (Yaak)
1975	Fall	Clark	Manley	S	2-3	4	*Wood Cr. in clearcut next to B.C. (Yaak)
1977	Fall	Burrell	Carlton	S	11	2	*N. Fk. Yaak (Yaak)
1978	September	Canavan	Carlton	T	?	4	*Caribou Cr. (T37N,R30W,S12) (Yaak)
1978	September	Sullivan	Manley	T	?	4	*Gold Cr. (Yaak)
1978	October	logger	Summerfield	S	4	3	*Canuck Cr. (T37N,R30W,S9) (Yaak)
1979	October	Canavan	Carlton	T	?	4	*Mushroom Mtn. (T35N,R33W,S26) (Yaak)
Decade: 1980-1985							
1980	Fall	Snyder	Carlton	S	2	3	*Yodken Cr. (Yaak)
1980		Gilmore	Carlton	T	6-8	4	Sage Cr. Block 7281 in B.C. apparently attracted to oil seepage around capped well. (N. Fk. Flathead)
1980	Fall	Norris	Manley	S	3	3	*Frozen Lk. Road (Whitefish Range)
1981		Ladenburg	Carlton	S	1	3	*Single bull (T34N,R21W,S13) (N. Fk. Flathead)
1981	April 30	McKnelly	Carlton	S	2	2	*Crossing road, moving south toward Porcupine Cr. (T36N,R30W,S2) (Yaak)

APPENDIX 1. (continued)

Year	Month	Observer	Source	Type[1]	Total	Rating[2]	Location and Comments
1981		Geologist	Summerfield	S	1	3	Mature bull, lunch Pk. (T50N,R2E,S15) in Idaho (W.Cabinets)
1981	Fall	Thompson	Manley	S	2	3	*Bulls on Squaw Pk., while hunting (W. Cabinets)
1982	May 18	Timber crew	Manley	T	?	2	*Eight people on the timber crew observed the tracks. Wigwam R. (T37N,R25W,S20) (Galton Range)
1982	May 24	Kramer	Carlton	S	1	3	*Crossing road (T36N,R30W,S2) (Yaak)
1982	July 20	Sylling	Carlton	T	?	4	*(T36N,R30W,S25) (Yaak)
1984	Late February	Pearson	Manley	S	5	1	One calf, 3 cows, 1 unknown, between Sundown Cr. and Yahk R. in B.C. Photo was taken. Reported by Markentin.
1984	April 29	Dimeo	Manley	T	Multiple	2	*Bluebird Cr. (T37N,R25W,SW1/4,S30)
1984	Spring	Yanishevsky	Carlton	T	Multiple	4	*(T36N,R22W,S16) (N. Fk. Flathead)
1984	July	Seismic workers	Carlton	S	3	3	*Bulls in velvet near Doris Mtn. (Swan Range)
1984	July	Turner	Carlton	S	1	4	*Observed three days in a row near his camp at Cliff Lk. (Swan Range)
1984	August 25	Hadstrom	Manley	S	1	3	*Crossing Rd. Bluebird Cr. (Galton Range)

1- Type of report: A-antler, K-kill, S-sighting, T-track

2- Rating of report:
1-confirmed
2-probable
3-possible
4-unknown
5-from the literature (treated as confirmed)

*- Report located within Montana

APPENDIX A

Report #

MOUNTAIN CARIBOU REPORTING FORM

TYPE OF REPORT (circle): Sighting Track Other:_____

DATE OF OBSERVATION: MONTH:_____ DAY:_____ YEAR:_____ TIME:_____

OBSERVED BY:_____ ADDRESS:_____
CITY:_____ STATE:_____ ZIP:_____ PHONE:_____
PROFESSION:_____
NUMBER OF YEARS RESIDED IN THE AREA:_____ AGE:_____
OUTDOOR ACTIVITIES:_____
ESTIMATED NUMBER OF DAYS SPENT IN THE BACKCOUNTRY PER YEAR:_____
REASON FOR BEING IN THE AREA DURING OBSERVATION:_____
EXPERIENCE WITH UNGULATES; (Check experience for each species)

SPECIES	None	Limited	Experienced	Very experienced
Mule deer	__	__	__	__
White-tailed deer	__	__	__	__
Elk	__	__	__	__
Moose	__	__	__	__
Caribou	__	__	__	__

If "limited" to "very experienced" with caribou; Where:_____
When:_____ Observed: Yes__ No__ Hunted: Yes__ No__

LOCATION OF REPORT:
Township:_____ Range:_____ Section:_____ 1/4 Section:_____
County:_____ State/Province:_____
Drainage:_____ Specific directions to location:_____
_____
_____
Elevation:_____ Aspect:_____ Habitat type:_____
Canopy coverage:_____ Distance from road:_____
Snow depth:_____ Condition of snow:_____

SIGHTINGS:

Circumstances:
Distance (in yards) to animal:_____ Length of time observed:_____
Optics (circle): none binoculars spotting scope rifle scope Power__
Weather (circle): sunny cloudy raining snowing Other:_____
Animal(s) in (circle): timber brush open Other:_____
Visibility (circle): poor fair good excellent
No. of observers:_____ Names:_____
Number of animals:_____ Activity:_____
Reaction of animals to observer:_____
Photograph taken: yes__ No__ (If yes, where is it?)_____

Physical description of animal:

Size in relation to deer, elk and moose:_____

Height at shoulder:_____ Tail length:_____ Ears:_____

Legs:_____ Feet:_____ Muzzle:_____

Antlers: Yes__ No__ Unknown__ In velvet: Yes__ No__ Unknown__

Description of antlers:_____

Gait or movement of animals:_____

Other comments:_____

_____

Coloration of animal:

Body:_____

Neck:_____

Head:_____

Legs:_____

Rump:_____

Tail:_____

Other comments:_____

_____

_____

TRACKS:

Track measurements: length:_____ Width:_____ Dew claws: Y__ N__

Shape of track:_____

Track in: mud____ snow_____ ice____ dirt____ other_____

Length of stride:_____ Plaster cast: Y__ N__ Photo: Y__ N__

Measurements of other tracks:_____

Estimated number of animals:_____

Activity of animals:_____

Cattle in the area: Yes__ No__ Unknown__

Other comments:_____

_____

OTHER REMARKS:

Reported by:_____ Address:_____

City:_____ State:_____ Zip:_____ Phone:_____

Profession:_____ Date received:_____

RATING (Appendix B):_____

APPENDIX B

RATING SYSTEM FOR CARIBOU REPORTS

This system was developed to standardize the method of determining the credibility of caribou reports. Anyone can rate a report with this system using the information present on the reporting form (Appendix A), however familiarity with the observer and circumstances of the report will probably be helpful in making minor point adjustments.

In using the system, sighting and track reports have different criteria for determining points. All criteria in categories I and II are the same for sightings and track reports whereas criteria differ as to type of report in categories III, IV, and V. Only use the criteria that apply to the type of report being rated (sighting or tracks). Feel free to give points between what is stated on the sheet. For example, if criteria jump from 3 to 5 points and you feel that the report should be given 4 points, give 4 points. When the points are totalled, give the report a rating according to the scale at the end.

1. OBSERVER'S RELIABILITY — Total possible points...20

A. Backcountry experience

1. spends very little, if any , time in the backcountry	1 pts.
2. occasional weekend outdoors person	2 pts.
3. avid outdoors person who spends most weekends and vacations outdoors.	4 pts.
4. lives and/or works most days in the backcountry.	5 pts.

B. Occupation

1. office or city job not related to wildlife	1 pts.
2. outdoor job not related to wildlife (highway dept., railroad, etc.)	2 pts.
3. outdoor job dealing with animals and occasional contact with wildlife (farmer, rancher, logger, etc).	3 pts.
4. outdoor job dealing directly with wildlife (outfitter, guide, trapper).	4 pts.
5. biologist or other professional with training in wildlife biology and considerable field experience.	5 pts.

C. Credibility within the community

1. poor credibility according to two or more sources. 0 pts.
2. unknown or poor credibility according to one source. 1 pts.
3. fair to good credibility according to one source. 2 pts.
4. good credibility according to two or more sources. 3 pts.
5. Excellent credibility according to two or more sources. 5 pts.

D. Experience with ungulates

1. never seen a caribou, elk, moose or deer (wild or captive). 0 pts.
2. limited experience with caribou, moose, deer and elk 1 pts.
3. very familiar with elk, deer, and moose but limited or no experience with caribou. 3 pts.
4. very familiar with elk, deer, moose and caribou in the wild. 5 pts.

Total pts. ___

II. LOCATION AND CORRELATION WITH OTHER REPORTS Total possible points...10

A. Geographical correlation

1. no reports within a radius of 25 miles 1 pts.
2. reports present within a 25 mile radius 2 pts.

B. Temporal correlation (only if other reports present within 25 mile radius).

1. no reports in the preceeding or succeeding 5 years 1 pts.
2. reports present within the preceeding or succeeding 5 years. 2 pts.

The following two categories are rated based on the season of the observation (spring May 16 -July 15, calving June 8 -July 15, summer July 16 -Oct. 15, early winter Oct. 16 -Jan. 15, late winter Jan. 16-May 15) if the elevation and habitat of the report match up with the seasonal elevation and habitat below, add 3 pts. for each. If no match give 0 pts.

	SEASON				
	Spring	Calving	Summer	Early winter	Late winter pt
C. Elevation	4000-6500	5500-7500	4000-7500	3500-7500	5500-7500
D. Habitat	ABLA&TSHE	ABLA	ABLA	ABLA&TSHE	ABLA

Total pts. ___

III. CIRCUMSTANCES OF REPORT Total possible points...30

Sightings:

A. Distance (when optics were used to observe the animal use the following equation to determine the "unaided eye distance" (distance/power=unaided eye distance). Use the following distances and points when no optics were used or when optics were used, the "unaided eye distance".

Distance (without optical aid or "unaided eye distance")	
1. greater than 500 yds.	1 pts.
2. 300 to 500 yds.	2 pts.
3. 100 to 300 yds.	4 pts.
4. less than 100 yds.	6 pts.

C. Length of observation

1. less than 5 seconds	1 pts.
2. 5 to 15 seconds	3 pts.
3. 15 seconds to 5 minutes	5 pts.
4. more than 5 minutes	6 pts.

D. Weather

1. raining or snowing	1 pts.
2. overcast (cloudy)	5 pts.
3. sunny to partly cloudy	6 pts.

E. Cover

1. in brush and or timber	2 pts.
2. in the open	4 pts.

F. Visibility

1. poor	1 pts.
2. fair	2 pts.
3. good	4 pts.
4. excellent	6 pts.

G. Number of observers

1. one	1 pts.
2. two or more	2 pts.

Total pts. ____

IV. DESCRIPTION OF ANIMAL Total possible points...40

This category is difficult to rate due to the variability in size and coloration between sexes, ages and season of the year. In order to deal with this the rating system becomes more complex. In order to keep the rating of reports consistent follow the procedure carefully.

1. Determine the seasonal category of the report (spring, calving, summer, early or late winter, or unknown).
2. Read the reports physical description and coloration of the animal and place it in one of the following classifications: Mature bull, mature cow immature, unknown. (Do not guess! If there is no way to determine sex based upon antler size, retention of antlers, and coloration note it as unknown.
3. Proceed to the season noted and compare the physical and coloration descriptions listed with those reported. If the reported descriptions fall within the range listed than mark that description with an "X", if no description is given mark with a "0", and if the reported description is totally wrong mark with a "-".

SEASON (all seasons)

	Classification				
	Mature bull	Mature cow	Immature	Unknown	mark
1. body size	deer<c<elk	deer<=c<elk	c<=deer	c<deer<=c<elk	__
2. shoulder ht.	3.5-4.5 ft.	3.5 to 4ft.	3-4ft.	3-4.5ft.	__
3. tail length	3-4in.	3-4in.	3-4in.	3-4in.	__
4. size of ears	small	small	small	small	__
5. legs (length)	long	long	long	long	__
6. feet (size)	large	large	large	large	__
7. muzzle	wide,square	wide,square	wide,square	wide,square	__
8. rump color	little white	little white	little white	little white	__
9. tail color	whitish	whitish	whitish	whitish	__
				Total	___

Season (Spring; May 16-July 15)

	Mature bull	Mature cow	Immature	Unknown	mark
12. antlers	possibly	yes, til June	possibly	possibly	__
13. antler cover	velvet	hard	velvet	velvet	__
14. antler descp.	small/ developing	erect,spindly spike/branched	small/ developing	small/ developing	__
15. body color	bleached,brown mottled/grey	bleached,brown mottled/grey	bleached, brown,mottled greyish	bleached,brown mottled greyish	__
16. neck color	may be light	may be light	may be light	may be light	__
17. head color	dark/bleach	dark/bleach	dark/bleach	dark/bleach	__
18. leg color	bleached/dark	bleached/dark	bleached/dark	bleach/dark	__
				Total	____

Season (Summer; July 16-Oct. 15)

	Mature bull	Mature cow	Immature	Unknown	mark
12. antlers	yes	yes	possibly	possibly	
13. antler cover	velvet til Sept.	velvet til Sept.	velvet til Sept.	velvet til Sept.	
14. antler descp.	large,branched semi-palmate, shovel	erect, spindly, spike/branch	small,spike branched	small, spike/ branch	
15. body color	brown to choc. brown/greyish	brown to choc. brown/greyish	brown to choc. brown/grey	brown to choc. brown greyish	
16. neck color	may be white	may be light	may be light	may be light	
17. head color	brown/dark	brown/dark	brown/dark	brown/dark	
18. leg color	body color, darker	body color, darker	body color, darker	body color, darker	
				Total	

Season (Early winter; Oct. 16 - Jan. 15)

	Mature bull	Mature cow	Immature	Unknown	mark
12. antlers	til mid Dec.	yes	possibly	possibly	
13. antler cover	hard	hard	hard	hard	
14. antler descp.	large,branched semi-palmate, shovel	erect,spindly, spike/branch	small,spike/ branched	small,spike branched	
15. body color	brown-choc. brown/grey	brown-choc. brown/grey	brown-choc. brown/grey	brown-choc. brown/grey	
16. neck color	white	may be light	may be light	may be light	
17. head color	brown/dark	brown/dark	brown/dark	brown/dark	
18. leg color	body color, darker	body color, darker	body color, darker	body color, darker	
				Total	

Season (Late winter; Jan. 16 - May 15)

	Mature bull	Mature cow	Immature	Unknown	mark
12. antlers	none	yes	none	possible	
13. antler cover	none	hard	none	hard	
14. antler descp.	none	erect,spindly, spike/branch	none	none	
15. body color	bleached,brown greyish	bleached,brown greyish	bleached, brown/greyish	bleached, brown/grey	
16. neck color	may be white	may be light	may be light	may be light	
17. head color	bleach/dark	bleach/dark	bleach/dark	bleach/dark	
18. leg color	body color, darker	body color, darker	body color, darker	body color, darker	
				Total	

Season (Unknown)

	Mature bull	Mature cow	Immature	Unknown	mark
12. antlers	possibly	possibly	possibly	possibly	__
13. antler cover	velvet/hard	velvet/hard	velvet/hard	velvet/hard	__
14. antler descp.	small-large, branched	erect,spindly, spike/branch	small,spike, branch	small,spike, branch	__
15. body color	bleached,brown choc. br/grey	bleached,brown choc. br/grey	bleached, brown, choc. brown/grey	bleached, brown,choc. brown/grey	__
16. neck color	may be white	may be light	may be lighth	may be light	__
17. head color	bleach/dark	bleach/dark	bleach/dark	bleach/dark	__
18. leg color	body color, darker	body color, darker	body color, darker	body color, darker	__

Total ___

To calculate points for the above;
1. add the the total number of X's.
2. divide that total by 15
3. multiply by 40 to get the point score

If there are any minuses recorded evaluate that category to decide if it is significant. (Example: If a minus is recorded in the length of tail category because the person said 6 inches, it may not be as significant as if the person had said that the animal had a dark brown mane).

BONUS POINTS: The following characteristics are considered unique and key in identifying caribou. If these key characteristcs are mentioned in the report the following points should be added to the total.

Coloration:

1. white neck	10 pts.
2. dark body and white neck	15 pts.
3. white neck and dark head	15 pts.
4. dark body, white neck and dark head	20 pts.

Antlers:

1. hard antlers present in April and May	15 pts.
2. presence of shovel, semi-palmate	15 pts.

Total pts. _____

V. TRACKS: (Put an "X" by each category that matches the report, "O" for no description, and "-" when totally wrong)

A. Tracks circular in shape
B. Tracks at least 5 inches in diameter
C. Track fresh (not melted out)
D. All details of tracks visible (not in 6" of powder snow etc.)
E. Dew claws noticable
F. No cattle in the area
G. Within seasonal elevational range (refer II C)
H. Within seasonal habitat range (refer to II D)
I. Stride 3-4 ft.

Total ____

To calculate the points for tracks:
1. add the total number of X's
2. divide that total by 9
3. multiply by 40

If any minuses are marked, determine the significance and reevaluate the report.

BONUS POINTS FOR TRACK REPORTS

If total points for observer reliability (category I) equal at least 16 pts., and total points from track report above (category V) equal at least 20 pts., than add 30 points to the total.

Bonus pts. ____

DETERMINATION OF TOTAL POINTS FOR REPORT.

SIGHTINGS	Total Points	Tracks	Total Pts.
Observer's reliability (I)	___	(I)	___
Location & correlation (II)	___	(II)	___
Circumstances (III)	___		
Description of animal (IV)	___		
Bonus points (sightings)	___		
Tracks (V)		(V)	___
Bonus points (tracks)			___
Grand Total	___		___

RATINGS

Probable.....75+ pts.
Possible.....50-74 pts.
Unknown.....30-49 pts.
Unlikely.....less than 30 pts.

RATING:_____

RATED BY:_____

DATE:_____

COMMENTS:

APPENDIX C

PROCEDURE TO FOLLOWUP CARIBOU REPORTS AND/OR VERIFIED SIGHTINGS.

The purpose of this procedure is to establish a chain of action that has been formerly agreed upon so that each party responsibility is defined so that the process results in a speedy and smooth course of action.

The followup procedure applies only to recent reports for which verification may be possible. Historical reports should be recorded on the mountain caribou form (Appendix A) and rated (Appendix B) by at least three of the individuals listed in item 5.

REPORTING

1. The Montana Department of Fish, Wildlife & Parks (MDFWP) will be the primary contact for caribou reports/sightings and will initiate this reaction response procedure when caribou reports/sightings have been made.

2. All caribou reports/sightings will be given to the MDFWP in Kalispell within eight hours of receipt. These reports should be given to the following people:

NAME	OFFICE NUMBER	HOME NUMBER
Jim Cross	755-5505	755-4914
Bruce Campbell	755-5505	752-5283
Jerry Brown	293-7905	293-7905

During non office hours, these individuals should be contacted at their residences. If the above persons can't be reached the MDFWP receptionist will refer the person to the biologist at the appropriate ranger district.

3. To expedite transfer of information it is recommended that the first individual within the agency obtaining the report contact the MDFWP directly.

4. When a report is received the mountain caribou reporting form (Appendix A) should be filled out as completely as possible. If the reporting form is unavailable then the following information should be obtained:

a. Sighting or track report.
b. Name, address and telephone number of the observer (and reporter if different).
c. Complete description and directions on how to get to the location of the observation. (Include township, range, section).
d. Date and time of observation.
e. Number of animals observed.
f. Distance to animals.

g. Length of time observed.
h. Activity of animals.
i. Description of sign observed.
j. Cattle in the area.
k. Circumstance of observation (visibility, optical aids).

RATING AND FOLLOWUP

5. Three or more of the following individuals will evaluate the validity of the report: Wayne Browster, Jerry Brown, Bruce Campbell, Jasper Carlton, Jim Cross, Rob Hazelwood, Guenter Heinz, Bruce Hird, Tim Manley, and Bob Summerfield. The report will be scored based on the criteria recorded in Appendix B.

The following categories will be determined based upon the scoring system:

a. Probable. 75+ pts.
   Action: Followup recommended without delay.

b. Possible. 50-74 pts.
   Action: Followup recommended without delay.

c. Unknown. 30-49 pts.
   Action: Followup recommended.

d. Unlikely. Less than 30 pts.
   Action: None.

6. If a report falls into "a,b,c" above, followup will occur. The MDFWP will contact the USFS and State biologists in the area to organize the followup. If the report falls in to category "d" above, the information will be forwarded to the above parties by mail.

7. A followup search in response to a report will be as follows:

a. One-three of the individuals identified in item 5 will be informed of the decision to followup.
b. Preferably two field biologists will travel to the site and attempt to obtain the following while in the field:

   1. Confirm sign (tracks, hair, scat) and collect samples, photos, and measurements.
   2. Description of the habitat and apparent use (Feeding, bedding, trailing).
   3. Snow conditions (depth, compaction, depth of tracks)
   4. Estimate number of animals and group composition (different track measurements)
   5. Photographs of site, conditions, and animals.
   6. Within reason, follow tracks to try for visual confirmation.

c. The length of time spent in the area surveying will be dependent

upon the judgement of the field researchers.

8. When a caribou report has been verified by the followup crew, immediate confidentiality will be maintained and the following action will be taken:

a. The MDFWP will be notified.

b. The members of the Interagency Caribou Committee and the land management agency will be contacted by the MDFWP as soon as possible.

c. The committee and agency will decide on any immediate management actions that may be appropriate.

d. The public will be notified by the MDFWP as soon as the situation warrants.

f. If any caribou are found, meetings with cooperating agencies will be held to develop an interim management plan.